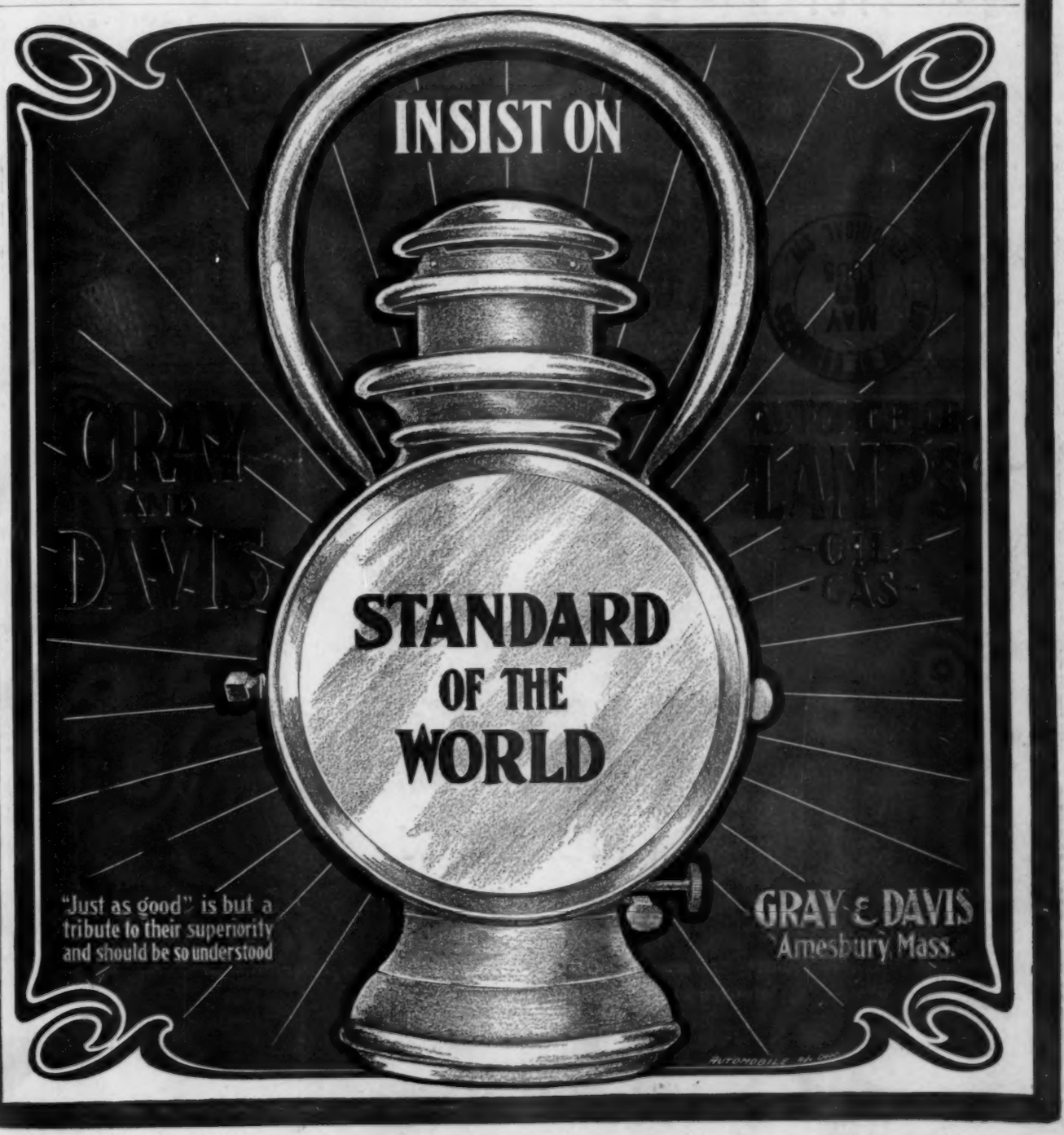
THE AUTOMOBILE

WEEKLY NEW YORK—THURSDAY, MAY 25, 1905 —CHICAGO 10 CENTS



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THE AUTOMOBILE

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FIRST MORRIS PARK TRACK RACES.

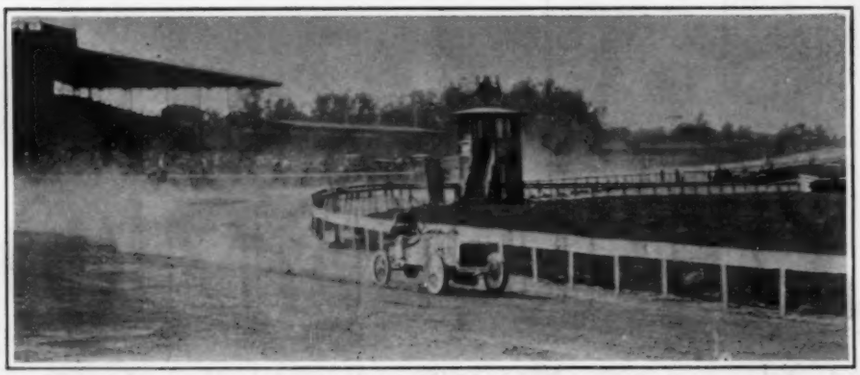
RACING at "the only track in the world devoted exclusively to automobile racing," as the management announces, was inaugurated last Saturady at the Morris Park track at Westchester, the Bronx, New York City. There was a fair attendance of spectators, variously estimated at from 5,000 to 7,000, who made their way in many touring cars and by rail. They were not deterred from going by a cold northwest wind, for the sky was clear and the meet promised to be an interesting one. Unfortunately, the promise was not entirely fulfilled, for a number of reasons, although the times in the various events were fast; they would have been much better if the contestants had not had to drive into a dead ahead wind on the back stretch and at the same time mount a very perceptible grade there. Although the track had been especially prepared by increasing the banking

MORRIS PARK TRACK AT OPENING MEET ON MAY 20—VIEW FROM CLUBHOUSE SHOWING HOME STRETCH AND STRAIGHTAWAY.

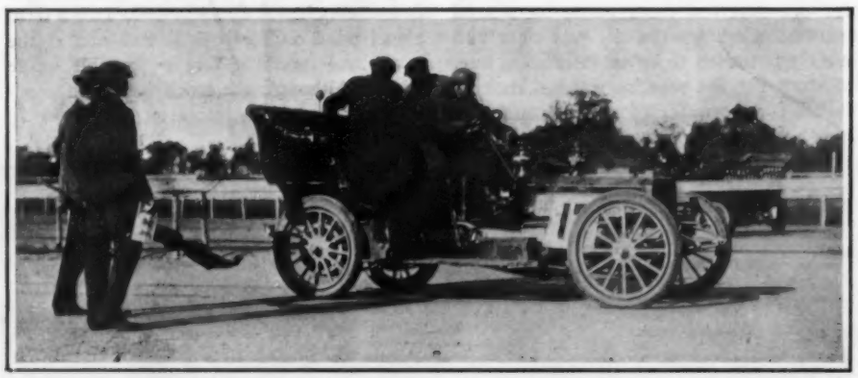
of the turns and rolling and sprinkling the surface, the first turn below the grandstand was so close to the judge's stand and was such a short turn that none of the drivers of the fastest cars dared to take it at full speed.

Another unfortunate feature that robbed the events of their usual interest for the spectators was that the track measures 1 5-16 miles in circumference, and, as the events were at one, two, three and five-mile distances, most of them were started in the back stretch instead of in front of the stand as usual. Notwithstanding the oiling of the first turn and the sprinkling and rolling of the rest of the course, the machines tore up much dust, and even the wind raised clouds of yellow dust on the back stretch and drifted them into the faces of the drivers.

In favor of the course it may be said that the accommodations are ample for an immense attendance, the surroundings attractive, the track wide and the stretches so long that tremendous speed can be made on them; also, when the construction of the structure for the underground rapid transit road is finished in a few weeks, the Morris Park track will be the most easily reached course in the metropolitan district by way of the east side subway and also by the east side elevated roads, connecting with the New York, New Haven & Hartford railroad at 131st street, New York City.



GUY VAUGHN LEADING IN THE DECAUVILLE AT THE TURN OPPOSITE CLUBHOUSE.



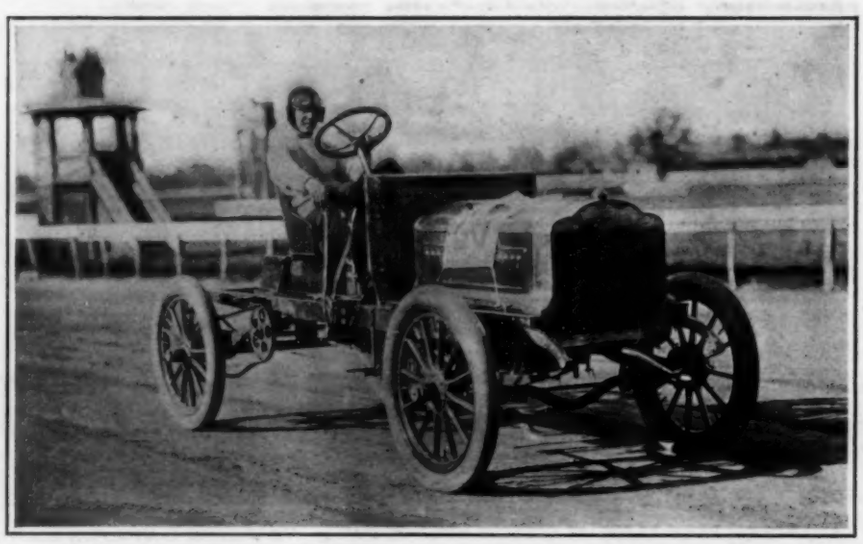
PEUGEOT TOURING CAR WHICH MADE A REMARKABLE DEMONSTRATION OF SMOOTH FAST RUNNING--LOADING PASSENGERS IN INAUGURAL CUP RACE.

The most interesting events of the day were the Morris Park Handicap at five miles, the Oldfield-Basle match race in heats, and the three-mile free-for-all. In the match race Oldfield drove the Peerless 50-h.p. *Green Dragon* and Charles Basle drove H. L. Bowden's 90-h.p. *Flying Dutchman*. As the two cars were not evenly matched in power the German car had all the best of it against the wind and grade in the back stretch and won in both heats, which were run at a distance of four laps of the track, so that the final heat was not needed. The contestants were started on opposite sides of the track, Oldfield at the judges' stand and Basle at the mile mark in the first heat, and in reverse positions in the second heat. Though Oldfield got the best start in the first heat, Basle steadily gained on him, doing the first mile in 53 1-5 seconds or at the rate of nearly 68 miles an hour. Basle finished the four laps (5 1-4 miles), half a mile in the lead, in 5:34 3-5. Oldfield's time was 6:06 4-5.

In the second heat Oldfield did much better, holding his own through the first and second laps, but losing two rods in the third and finishing one-sixteenth of a mile to the bad in the fourth lap. His time for the fourth mile was 58 seconds, against Basle's 56 1-5 seconds. The respective times for the four laps were, Basle, 5:58 4-5, and Oldfield, 6:02 2-5.

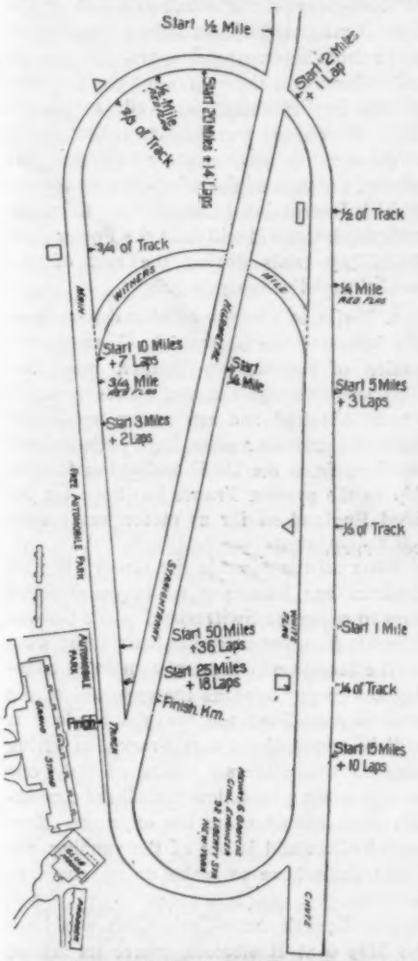
Fast times were made in the mile trials against time, which opened the afternoon's program, started at 2.20 P. M. Of the five cars that made trials, the best time was made by the 90-horsepower Fiat, driven by Louis Chevrolet, the mile being covered in 52 4-5 seconds. This is better by 1-5 second than the world's track record of 53 seconds made by Barney Oldfield at Los Angeles last December, and was announced as breaking the world's record. Another new record was announced when Webb Jay, in the White 15-20-horsepower racer, covered the mile in 53 seconds, getting well within the record of 57 4-5 seconds made by Louis Ross at Providence last September. The new times were made, however, around only four-fifths of the track, the shortest and slowest turn being eliminated and a full quarter of the mile being slightly down grade in the home stretch, with a strong wind behind.

The Morris Park Handicap brought out a Peugeot car, a make rarely seen on the track. The car ran regularly and well, but did not show at its best until the running of the Inaugural Handicap toward the close of the afternoon. In the final of the former there was an interesting brush between the White steamer and the 40-horsepower Decauville. The steamer started scratch,



ROBERTS AT THE WHEEL OF THE THOMAS 40-HORSEPOWER STRIPPED TOURING CAR.

seven seconds after the Decauville and was close behind when they struck the sharp turn below the clubhouse, and on the outside. The Decauville skidded badly and raised a heavy wake of oiled dust; Vaughn had to shut down the engine momentarily until he could straighten up the car. This added to the advantage of the White, which has a tremendously long wheelbase and a low center of gravity, and can take the turn better. The Decauville was over-overhauled after covering one lap and a quarter mile. As Jay passed the judges' stand the second time he passed the limit car, a 9-horsepower Cadillac, driven by



Ground Plan of the Morris Park Track Showing the Various Starting Points.

A. S. Winslow, who had won the first heat and had a handicap in the final of 4 min. 17 sec. But the Cadillac was still one full lap in the lead and Jay could not overcome all of it. Winslow won by nearly an eighth of a mile from Jay, second. A. F. Comacho ran third with the 12-horsepower Franklin, which ran uniformly fast and well throughout the day, and Vaughn finished last. The elapsed time was announced as 8:02 2-5.

The only real competition of the day that contained an element of excitement occurred in the three-mile free-for-all open to all classes, which was run off last. The starters were, Chevrolet with the 90-h.p. Fiat; Basle with the 90-h.p. Mercedes *Flying Dutchman*, and Jay with the White steamer. They got away beautifully together from the three-mile starting point in the home stretch and made a dash for the dangerous first turn. Jay got there first, Basle second and Chevrolet was last, on the outside. In the back stretch the Mercedes began slowing down and dropped out on the upper turn, allowing the Italian machine to pass. The steamer held the lead through the entire lap and took the bad turn well out from the pole. When the Fiat struck the turn she skidded so badly it looked as if she must turn over, but Chevrolet prevented this catastrophe by easing up the steering wheel, which caused the car to barely shave the outer fence where the *Flying Dutchman* ran off the track in practise the day before.

Instead of causing the driver to lose his nerve, however, this only seemed to raise his determination to win, and putting on all power in the back stretch he overhauled and passed the steamer opposite the grandstand, where his great power gave him the advantage on the upgrade against the wind. Chevrolet won by a quarter mile in 2:51 4-5 for the three miles. Jay's time was 3:04 2-5.

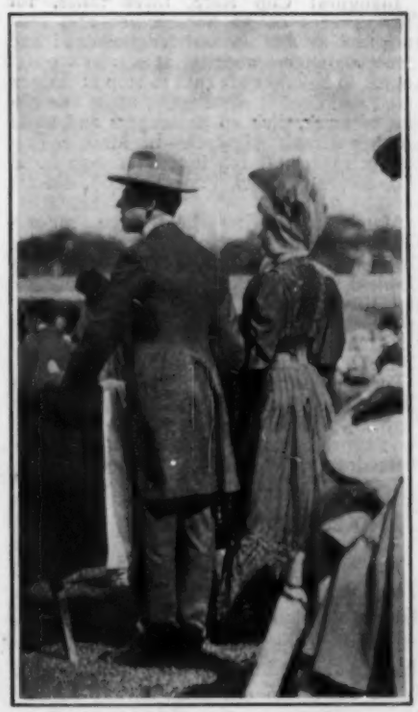
Following are the summaries of the afternoon's events:

SUMMARIES.

One-mile time trial—Louis Chevrolet (Fiat, 90-h.p.), time, 52 4-5 seconds, inside of world's track record by 1-5 second; Webb Jay (White 15-20-h.p. steam racer), time, 53 seconds, announced as world's record for steam cars; Charles Basle (H. L. Bowden's 90-h.p. Mercedes), 54 4-5; Walter Christie (Christie 60-h.p. racer), :56 3-5; Barney Oldfield (Peerless 50-h.p. *Green Dragon*), 1:00 3-5.

Corinthian mile, flying start race, for amateur owners only—Richard Stevens (60-h.p. Mercedes), time, 1:09; George I. Scott (60-h.p. Mercedes), 2nd; time, 1:21 2-5.

Two-mile flying start race for middleweight cars— Guy Vaughn (40-h.p. Decauville racer), 1st; time, 2:31 3-5. Major C. J. S. Miller (30-h.p. Renault) did not finish.

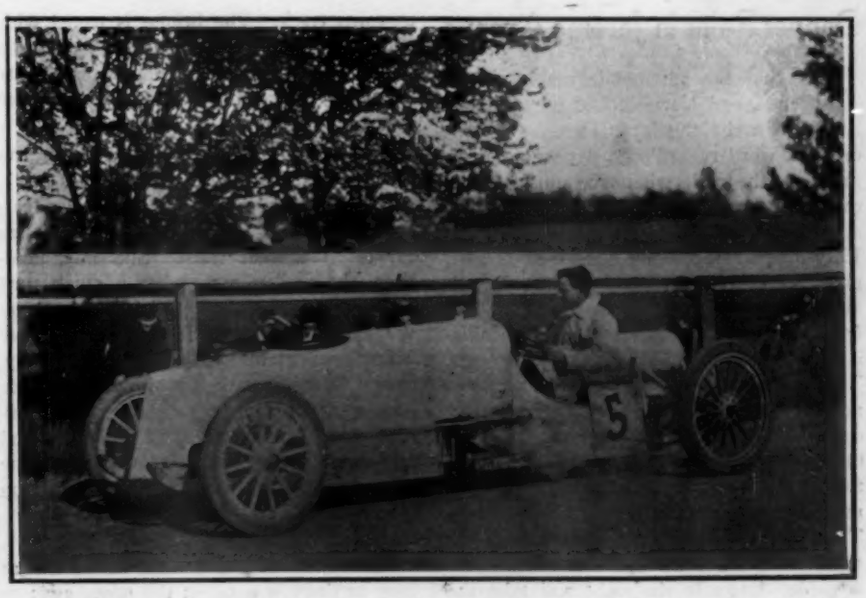


George Arents, Who Was Badly Smashed Up in the Vanderbilt Race, An Interested Spectator.

Morris Park Handicap, five miles, all classes, first heat—A. F. Comacho (12-h.p. Franklin), handicap 2:35, 1st; A. S. Winslow (9-h.p. Cadillac), handicap 4:45, 2nd; William McIlvoid (32-38-h.p. Royal), handicap 1:50, 3rd. Time, 8:38 2-5.

Second heat—M. Roberts (20-h.p. Thomas), handicap 2:00, 1st; Guy Vaughn (40-h.p. Decauville), handicap :35, 2nd; Webb Jay (15-20-h.p. White steam racer), scratch, 3rd. Time, 7:19 2-5.

Final—A. S. Winslow (9-h.p. Cadillac), handicap 4:17, 1st; Webb Jay (15-20-h.p. White), scratch, 2nd; A. F. Comacho (12-h.p. Franklin), handicap 1:13, 3rd. Time, 8:02 2-5.



WEBB JAY IN NEW WHITE STEAM RACER, WHICH COVERED THE MILE IN 53 SECONDS.

Inaugural Cup Race, three miles, for touring cars of 30 horsepower and less, each car to line up with engine dead and three passengers aboard; at starter's pistol engine to be cranked; cars to stop at judges' stand and deposit passengers, make one circuit of track, pick up passengers and make another circuit of track—L. Markle (24-30-h.p. Peugeot), 1st, time 5:11 2-5; L. E. Van Sickles (30-h.p. Pope-Toledo), did not finish.

Match race, first heat, five miles—Charles Basle (90-h.p. Mercedes *Flying Dutchman*), 1st; time, 5:34 3-5; Barney Oldfield (50-h.p. Peerless *Green Dragon*), 2nd, time, 6:06 4-5.

Second heat, four laps (equivalent to 5 26-100 miles)—Basle, 1st; time, 5:58 4-5; Oldfield, 2nd; time, 6:02 2-5.

Three-mile free-for-all, flying start—Louis Chevrolet (90-h.p. Fiat), 1st, time, 2:51 4-5; Webb Jay (15-20-h.p. White), 2nd; time, 3:04 2-5; Charles Basle (90-h.p. Mercedes *Flying Dutchman*), dropped out.

Notes on the Racing Cars.

The enclosure allotted to the competing cars was not a particularly lively place, though occasionally a big car would break into a deafening roar, after which the silence would seem deeper than ever. A mild flutter was occasioned when Barney Oldfield drove up in his touring car with the *Green Dragon* trailing behind on the end of a tow-rope. Everyone knew whose outfit it was, for if they were not acquainted with the brilliant exterior of the *Green Dragon* they could read Oldfield's name on the back of the tonneau of the touring car. The tonneau was occupied chiefly by a small dog tied up with a large chain—a very silent animal who kept his mouth closed and did not bark whether his master won or lost.

The 30-horsepower Renault racing car formerly owned by W. Gould Brokaw and driven by Joseph Tracy in several hard-fought contests, now the property of Major C. J. S. Miller, who drives it in amateur events helped to make the place look homelike and familiar; but the White steam racing car did much to dispel this feeling. The steam speeder is an exceedingly rakish looking craft, being long and narrow and hanging very low. The aluminum covering is sharp pointed and narrow, offering little resistance to the air and covering the machinery entirely. The frame, which is of wood, hangs from the axles in the same way as does the frame of the *Green Dragon*. In the point or "bow" of the car is the water tank, reached through a large opening in the top; back of this is the boiler, with the pipe for carrying off the waste products of combustion cut off flush with the top of the sheathing. Back of the boiler is the engine, which drives to the live rear axle through a propeller shaft and bevel gears. Directly over the rear axle is the gasoline tank, cylindrical and round ended, set with its length fore and aft; and between the tank and the engine is the seat for the driver. The engine, boiler, axles and driving gear are the same as used in the White touring cars; additional power is gained, however, by carrying a higher steam pressure than in the road machines; and the car, big though it looks, is stated to weigh only a trifle over 1,400 pounds. The quiet, unobtrustive manner in which the low white racer stole around was a great contrast to the noisy progress of the gasoline cars, and one of the spectators in the enclosure suggested calling it the "White Mouse."

Oldfield's *Green Dragon* developed circulation troubles previous to his last appearance on the track, and his men were kept busy plugging up leaks. Oldfield was not feeling in the best of humor for some reason or other. "Don't like it at all," he said, in response to an inquiry as to what he thought of the track. "The back stretch is up-hill, and the first turn is a nasty one, and anyway it isn't the kind of a track I'm used to driving on."

Danger Point in Jerome Avenue

Now that the automobile racing season has opened, and New York city automobilists will travel along Jerome avenue in hundreds, a word regarding a danger point on the trip to the tracks will not be amiss. Many cars after coming down Jerome avenue keep straight on across the One Hundred and Fifty-fifth street viaduct instead of turning down Central avenue and so into Eighth avenue; and the cars that cross the viaduct frequently have narrow escapes from collisions with the Jerome avenue trolley cars. The trolley car tracks are double to a point near the end of the line, which is directly over the elevated railroad station; and there the double tracks come together. The down-town track is straight, but the up-town track makes a very sudden turn to join the other. Thus a car starting up-town will run straight for a short distance and then make a sudden lunge to the right and take the up-town track. The bridge is paved with stone blocks, making a roadway that is most unpleasant to drive over, and automobilists frequently take to the car tracks to avoid the vibration.

It frequently happens that a car starts up-town just as an automobile comes bowling along the up-town track, the driver feeling secure because he can see that the trolley car is on another track. Suddenly, however, the trolley car makes a quick turn onto the up-town track and bears down on the automobile; and the driver must have his wits about him to get out of the way. While it seems rather a simple matter to keep clear of danger, so many narrow escapes have been observed at this point, and all occurring in almost exactly the same way, that a word of warning to those who take this road may help to preserve the integrity of someone's car.

Keep clear of the trolley car tracks as long as there is a car at the upper end; or at least give yourself plenty of time to get out of the way in case the car starts unexpectedly—and they always start unexpectedly, as would-be passengers know to their sorrow.

Foreign News Notes.

The first meeting of the British Motor Boat Club was held on the Thames on May 6, when about thirty boats mustered at Kingston. Admiral Sir William Kennedy, who headed the procession down to Teddington, afterwards presided at the club dinner.

Hon. C. S. Rolls will drive the second Wolseley car in the selection trials on the Isle of man on May 30, after a long retirement from international sport. He has already been over the course for the Tourists' trophy in September, as well, as several Rolls-Royce cars are to start in that event.

The English marine motor committee has altered the date of the selection race for the British International Cup to Aug. 1, instead of a day later, and will hold the Power Boat Reliability trials during the rest of the week instead of early in July.

A Berlin to Clermont-Ferrand tour is on the books of the German A. C. on the occasion of the Gordon Bennett race. Six days are to be devoted to the excursion.

One hundred and ten motor omnibuses, each of thirty-four seats, have been ordered at Paris from the De Dion-Bouton factory. Up to the present France has been far behind England so far as motor buses were concerned.

After all the expense the Geneva firm of Dufaux has been put to in constructing cars to represent Switzerland in the Gordon Bennett race, the entry has been withdrawn, as the $10,000 which every competing country has to pay towards the expenses of the race is considered too heavy a burden. It will be remembered that France, in giving way to the universal desire of only one race, made it a condition that all the competing clubs should share the expenses. Now that Switzerland is out of the running, the other clubs have to make up its share as well.

The English Auto-Cycle Club was busy on May 6 at Haslemere, where its annual open hill-climbing competition was held, over a stretch of just one mile, with an awkward bend about halfway up at its steepest point. The results of the different events were as follows: Class 1.—Won by F. Hulbert (2 3-4 horsepower Triumph); time, 2:28 4-5. Class 2.—Won by A. E. Lowe (3-horsepower Jap); 2:31 4-5. Class 3.—Won by J. Hancox (3 1-4-horsepower Roc); 1:58 1-5. Class 4.—Won by J. F. Crundall (5-horsepower Humber); 1:48. Like many others, Crundall ran on to the grass in negotiating the bend, but he steered around a tree and back to the course.

The Los Angeles Y. M. C. A. will open a school for chauffeurs at an early date.

Plans for A. C. A. Clubhouse Accepted.

PLANS for the new clubhouse of the Automobile Club of America in New York city have been completed and approved by the club building committee, and the actual work of preparing for the erection of the building on West Fifty-fourth street, between Broadway and Eighth avenue, is actively progressing. The location is in the center of what is rapidly becoming the automobile trade district of the city, and from it the best roads leading northward out of town are easily reached by automobile.

Fronting on the north side of Fifty-fourth street, the building will have a width of 138 feet with a depth of 87 feet, and will be six stories high, exclusive of the basement. Light-colored building materials will be employed—light stone, marble or Indiana limestone, white brick—and terra cotta in two shades will be used for decorative purposes. The exterior ornamentation will be confined almost exclusively to the first and second stories, the upper part of the building being very plain. An enormous area of plate glass will admit an abundance of light to every floor.

The members' entrance will be at the Broadway end of the building, and the entrance for chauffeurs and employees will be at the Eighth avenue end; and between them large swing doors, one for the entrance and the other for the exit of cars. The car entrance opens into a large open room where fifty or seventy-five cars can be placed at one time. An employee will be in constant attendance at the car doors and will make records of all cars leaving and arriving, such records to be given to the owners.

Two turntables will be placed on this floor, one in front of each of the two great elevators which will run from basement to roof. The floor will be finished with a hard glazed material that is proof against the action of oil and gasoline and is, of course, fireproof. The elevators will have a capacity of four tons each, and their platforms will measure ten feet in width and eighteen feet in length. They will not only serve every floor, but will rise to a level with the roof, so that cars may be rolled out on the roof for photographic and other purposes.

Automatic devices will be provided so that the elevators cannot be started until the gates have been closed, and also to prevent the opening of the gates when the elevators are not at the landings. In addition to the open car space, the ground floor will be fitted with seven washing stands for cars, lockers for members and an office for the superintendent of the garage.

Of great interest to those who are mechanically inclined will be the basement of the new clubhouse. Here will be located the various machines which are necessary to all large buildings, and some made necessary by the character of this particular establishment. There will be a large electric generating plant run by steam turbines, and accidental breakdowns will be guarded against by the installment of a storage battery. The boilers for the turbines will face the vaults under the sidewalks, so that coal and ashes can be easily handled. No gaslight will be used in the building; everything will be electrically illuminated. Below the floor of the basement will be the gasoline tanks, each tank of comparatively small size so as to be within the requirements of the fire laws. Filling pipes will lead to the curbstone line on the street, so that when the tanks are being filled the hose will not have to cross the sidewalk. The electrical machinery for operating the huge elevators will be in the basement.

The clubrooms will be a striking feature of the new home of the A. C. A. A lobby, twenty-five feet wide and extending the entire depth of the building, will succeed the vestibule at the members' entrance; the garage superintendent's office and the members' locker room will be on the left of the lobby. A great staircase will lead from the end of the lobby to the second floor, where will be a very large and lofty room, extending two stories in height, with a beamed ceiling. This will be the assembly room; and adjoining it will be the grill room, with seating capacity for 300 persons. Adjoining the grill room will be the secretary's office, the bar, the kitchen and serving room, all fitted up in the most modern style. The mezzanine floor will contain members' billiard rooms, a recreation room for American chauffeurs and one for foreign chauffeurs. Chauffeurs' locker rooms and toilet rooms will be on the floors above.

The fourth and fifth floors will be used for the storage of cars; and these will be fitted up with movable metal partitions, so arranged that locked stalls can be provided for those who wish to keep their cars under lock and key.

On the top floor will be the repair shop—a fine, light room with large windows on all sides and a huge skylight in the roof. The shop will be completely equipped with tools and electrically driven machinery; a large space will be provided where chauffeurs may overhaul their own cars if they so desire. On this floor will be the dynamometer for testing the power of motors, a machine that will be a feature of the mechanical equipment of the clubhouse.

The building will be as nearly fireproof as it can be made, and every precaution will be taken against fires. Buckets of sand for extinguishing gasoline fires will be hung on the pillars of all rooms where gasoline is used. Elevators and stairways will be isolated by fireproof walls, and the elevator doors will be of iron.

Elevator doors will be placed in the clubrooms, so that cars can be run into the

(*Continued on page 648.*)

FRONT ELEVATION OF A. C. A'S. NEW HOME NOW BUILDING IN NEW YORK.

Carbureter Functions Discussed.*

By MERVYN O'GORMAN.

PART I.

Whether a car is regarded as an overgrown cycle or a dwarf locomotive by its maker, depends upon the character of his experience as an engineer. Car makers are mostly men of iron and steel, prone to overlook such small heat variations, chemical regroupings, and changes of physical state as their minds are not usually occupied with, and to neglect their influence upon the working of a carbureter.

What Do We Want from the Carbureter?—The answer is a discouraging one, for nobody knows, nor will know until a very elaborate series of experiments, have been made either by the quick cheap way of the laboratory requiring about one year's work of three people, or the expensive and slow way of the road, requiring about ten years' work of everybody. We must refer back to the engine.

We know that from the same engine we want different results, according to circumstances and times.

(1) Sometimes the most power at the highest speeds; *e.g.*, when racing, and on dead level runs.

(2) Sometimes the most torque at slow speeds; *e.g.*, starting, picking up in traffic.

(3) Sometimes the most speed at various torques; *e.g.*, hill-climbing in open country.

(4) Sometimes the minimum speed at no available torque; *e.g.*, engine crawling round when car is standing.

(5) Sometimes (as in commercial vehicles) the utmost fuel efficiency at various rates of working; *e.g.*, getting home when short of fuel.

Quantity.—The carbureter which is to meet these engine requirements must evidently be prepared to supply different quantities of mixture for these results. Although we may know for any one particular car the angle of inclination of the throttle lever advisable, this has little relation to the amount of gas used. As far as I am aware no one has yet published the results, and I rather think no one has ever yet got any results worth publishing which give the measured volume at various speeds and positions of throttle valve in respect of any one of the types of car engines in use. This is a matter for regret, not felt by the user of the car perhaps, but of great concern to the designer of a carbureter, and that is why we are not concerned with it.

I am, fortunately, in a position to give you one result under this head, a result for which I am indebted—as in certain other matters which I shall mention—to my friend Mr. G. H. Baillie. He has found that a standard 4 1-2-horsepower De Dion engine, even with very clear, large, and open inlet and exhaust pipes, will only draw it at top speed of 1,500 revolutions, 50 per cent. of the volume swept by the piston. That is to say, the volume that might be taken in is 13.4 cubic feet, or about one pound of air per minute of suction time, and the volume that is taken in is 6.7 cubic feet, or about half a pound per minute. It is easy to see how this bears on the carbureter design, as simultaneously with the diminution of air coming in per stroke we have a considerable increase of vacuum, and of suction on the gasoline. What the volumes are at all the intermediate speeds is exactly one of those researches which must be publicly undertaken soon on some typical engine.

Quality.—Looking for grains of information as to the best quality of mixture for the various conditions named, we find a similar chaos of disordered knowledge. Makers have begun to recognize that the desirable mixture is not of constant quality (1 in 15, or 1 in 16, as is still occasionally asserted), but should vary according to the quantity taken, the speed of engine and the power required at that speed. It is clearly possible with a given carbureter

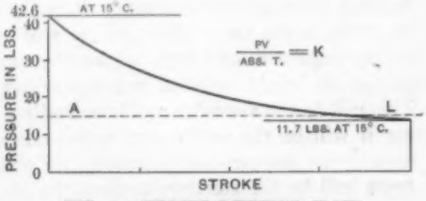


FIG. 1.—ENGINE RUNNING SLOW.

Curve showing increase of pressure if the temperature of the gas is unaltered (air, gasoline and burnt gas mixture).—All heat of compression lost to the cylinder.

and engine to delicately adjust the mixture for a whole series of conditions, and then collect samples of the exhaust gas and analyze each sample by condensing it in the usual way with liquid air and so estimate the quality of the mixture used.

Thus we could take 10 one-mile sprints with everything in good trim, and vary nothing but the mixture. Our experimenter would adjust mixture for the first half-mile, and open the tap from the exhaust byepass to the sample collecting cylinder during the middle section of the second half-mile. This would give an average analysis for high-speed conditions. Similarly an average analysis would be got from hill-climbing tests. Similarly again, for that mixture which enables the engine to merely keep itself rotating slowly.

These thirty samples will give definitely what weight of burnt and unburnt gasoline was indicated in each pound of exhaust gas. If simultaneously a very small air pump on the induction pipe (drawing at the same time as the engine draws its charge) was to collect samples of incoming mixture, we could also find directly what weight of gasoline was being taken in to each pound of air. I have not heard that this kind of test has yet been done, but the so-called "automatic" carbureter indicates that the public mind is inquiring for some such results. In fact, before accepting a carbureter, we ought to have some means of checking the makers' assertion that it gives automatically a correct mixture.

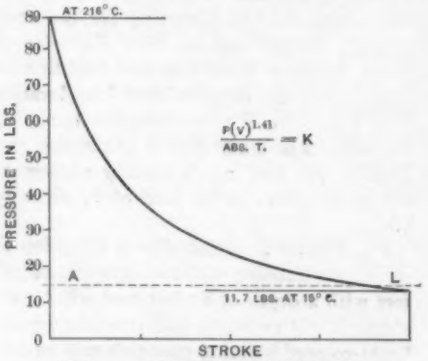


FIG. 2.—ENGINE RUNNING FAST.

Curve showing increase of pressure and final temperature if air at 15° C. be rapidly compressed.—No heat lost to engine walls.

Why "Automatic" Carbureters?—Reason I.—The automatic "extra air" valve was introduced to give to the engine at high speeds a diminished quantity of gasoline per stroke. This fact is often stated differently, namely, that it was introduced to give more air at high speeds than at low speeds, but this is the wrong way to put it. More air is available, but it is not taken, for from 40 per cent. to 25 per cent, less air per stroke is taken in at high speeds with any (or without any) automatic valve (at, say, 1,500 revolutions), than at low speeds (say 150 revolutions per min.) This is the chief reason why less gasoline per stroke is wanted if we wish to maintain what may for the present he called the normal proportions of mixture (say one part by weight of gasoline vapor to 15 parts of air). We cannot hope to cure this by making smoother and larger air passages and valves. Since the chief difficulty is not the friction of the air, but the inertia and elasticity of the air which prevents our giving it the necessary acceleration in the short time available to get it in.

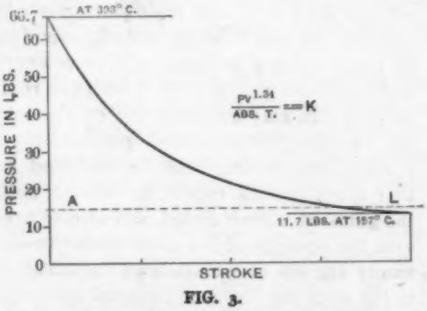


FIG. 3.

Curve showing increase of pressure and final temperature if compression takes place so fast that no heat is lost to the cylinder. (Air gasoline and burnt gas mixture.)

Reason II.—Besides this chief reason, there are subsidiary reasons why less than the normal flow of gasoline per stroke is wanted at the highest engine speeds. Thus,

*From a paper read before the Automobile and Cycle Engineers' Institute, Birmingham, England.

although the volume sucked in is about one-third less, the compression is effected ten times faster, and this means a *hotter* compression, and, therefore, a higher compression than if the same amount of gas were compressed in the same engine more slowly.

In the two extreme cases of speed, namely, infinitely slow and infinitely fast, the difference of pressure is enormous (Figs. 1 and 2). In an engine of which the ratio of compression is only 3.63 to 1, only 42 pounds compression is obtained in the one case and 89 pounds in the other, taking a supposed full charge of air in each case. Fig. 3 indicates the effect when mixture is used instead of air.

If the engine of my example had the usual five to one compression ratio, this would mean bad pre-ignition with a normal mixture, and a poorer mixture automatically given would be necessary to save the situation at high speeds, unless we submit to the inefficient process of diminishing the compression by strangling the volume of incoming gas. (At present we do submit, and at full speeds we usually work at half throttle without knowing it.)

The result of Figs. 2 and 3 arises from the lessened loss of heat to the cylinder walls during compression. Infinite speed is not approached, of course, but the range of

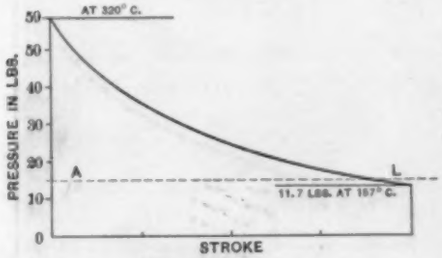


FIG. 4.

Plotted curve showing increase of pressure.

speeds in practice is very great, and we must not forget the diminution of all small leakages of gas past the piston rings, and valves, spark-plug, inspection cock, plugs and joints, when the stroke is rapid, all making for an increased compression and, therefore, from a carbureter point of view—all pointing to the desirability of a poorer mixture.

Reason III.—The high and hot compression is further enhanced by the incomplete discharge and high temperature of the exhaust from the previous stroke and the consequent greater temperature of the fresh gas when mixed with undischarged residue.

Mr. G. H. Baillie, who has calculated the initial temperature at the beginning of the compression stroke of an experimental engine in his laboratory, gives it as 157 degrees at the beginning, and 320 degrees C. at the end of the compression stroke at a normal speed, which we may take as 1,000 revolutions per minute. I give his curve of pressure (Fig. 4).

Reason IV.—A reason for requiring at low speeds more gasoline per stroke is based on a totally different consideration. At the limit of slowness with a normal mixture, we fail, even with a retarded ignition, to keep the engine rotating (because of the evanescent character of the explosion pressure and the failure to ignite, or, at least, the incomplete inflammation of the charge, which you will remember is much throttled down and, therefore, poorly compressed). But we find by experiment that a slightly more durable explosion pressure is secured and much more certain ignition is obtained when the mixture is rich in gasoline. We do not get complete combustion of the gasoline, and we take the risk of a little smell for the sake of a "flexible engine." This engine question has, therefore, become a carbureter question.

Similarly with other methods of enabling our engines to continue doggedly to do a modicum of work at slower speeds (this ought to be called "the doggedness" of the engines, rather than the "flexibility," a pedantic and feeble word), namely, increasing the relative size of the compression volume, increasing the number of cylinders, and using mechanical inlet valves, all of which bear directly upon carbureter design, because they affect the rate at which gas is called for, and the manner and frequency of that call. In fact, although an engine and a carbureter are made and sold as independent purchasable commodities, an engine will not travel its best if its carbureter does not fit. A car may "go down" because of its paint, like a gilded pill, but its reputation will also go down when its gilt wears off, and public indigestion sets in, when sooted spark plugs, and boiling radiators, and red-hot exhaust pipes and pre-ignition have been traced to their proper sources, viz., bad carburation.

In view of all this, it is small wonder that definite action has been taken even without laboratory experiments to vary the quality of the mixture in some manner remotely according to the conditions of its employment.

(To be continued.)

Gianoli Coil Vibrator.

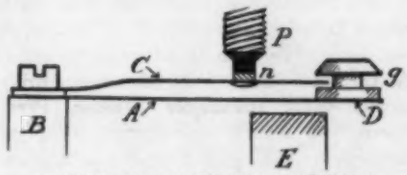
Special efforts toward the improvement of the jump spark ignition system are being made by the Gianoli firm, of Europe, makers of the improved contact breaker.

The latest improvement has been in the direction of coil vibrators. Two types of these are at present in the market: 1st, those in which the circuit breaking action is direct; and 2nd, those in which a moving part strikes the contact making part, which is separate, and thus breaks the contact.

In the first class the results would be satisfactory, were it not for the possibility of the sticking or gumming of the platinum points as a result of wear or of the presence of foreign matter. The frequent occurrence of this led to the production of the second class of vibrators.

In this class a vibrating blade is attracted intermittently by the iron core of the coil; in its movement this blade strikes a second blade carrying the platinum point or drop, causing the contact points to separate by a sudden shock that prevents any sticking. The efforts of the Gianoli firm were devoted to producing a vibrator of this class that should be extremely simple and whose vibrations should be remarkably rapid.

In the accompanying drawing showing the device diagrammatically, a blade *A*, made of special high-grade steel, is screwed on the bridge or support *B*, which also secures a second blade *C*. At the opposite end of *A* is riveted an ivory button *D*. The free end of blade *C* has a relatively large amount of play in the annular groove *g* in the button. Contact screw *P* is so adjusted as to bring the end of *C* into con-



GIANOLI IMPROVED COIL VIBRATOR.

tact with the lower side of the groove in *D* when the vibrator is at rest.

In operation, when the current passes, the core *E* is magnetized and attracts the blade *A*. The upper blade remains stationary until the underside of the head of the ivory button strikes its free end, when the shock causes the platinum point in the blade to separate from the contact point at the end of *P* and break the circuit.

This construction avoids the complication of vibrators built up of a larger number of parts, which are not only difficult to assemble but also to adjust, and obviates the use of small coil springs that are difficult to keep in order. The operation of the new vibrator is regulated entirely by the fixed distance that exists between the two sides of the groove *g*. The only adjustment that the driver of the car ever has to make is the turning down of the contact screw, after taking the vibrator apart to clean, until the end of blade *C* comes into contact with the lower side of the groove in the ivory button. The simplicity of the moving parts has the further advantage of reducing their inertia and thus giving the trembler a high rate of vibration.

The race committee of the Automobile Club of Great Britain and Ireland has changed the date for the elimination trials of the Gordon Bennett racers from May 23 to Tuesday, May 30, and the inspection of the cars will be made on May 29 instead of May 22, as previously announced. The trials will be held on the Isle of Man.

A company is being formed at Madison, Ga., having for its object the establishment of an automobile passenger service between that point and Eatonton. The road between these places is good and unusually level.

Good Racing Beach at Cape May.

Excursion from New York and Philadelphia Tests Northern Strand with Excellent Results—Fast Time by "Bullet No. 2."

A SEA beach suitable in every way for automobile short distance racing has at last been found in the North within reasonably convenient distance from the metropolitan district. It is at Cape May, on the extreme southern point of New Jersey that projects into the mouth of the Delaware bay, distant only 90 minutes by express from Philadelphia and from four to five hours from New York. It is also accessible by good roads from both places.

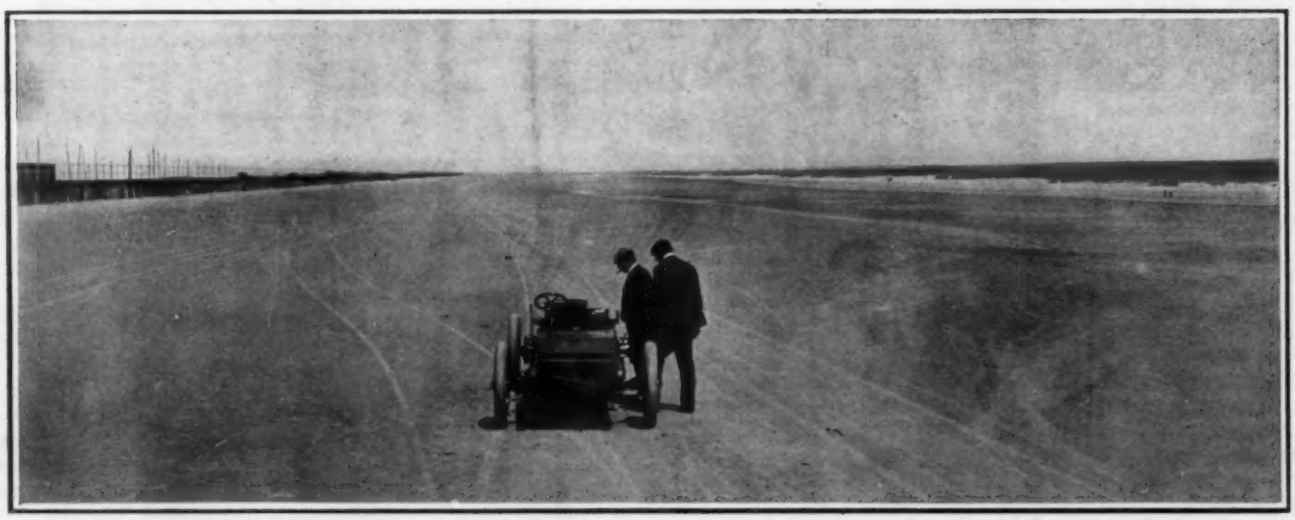
Last Thursday a party from New York, which included Secretary S. M. Butler, of the Automobile Club of America; Secretary A. G. Batchelder, of the American Automobile Club, Alexander Winton, Percy Owen, and several representatives of the automobile and daily press, journeyed to Cape May upon the invitation of parties in Philadelphia who had discovered the strip of beach and wanted to have a test made on it by Mr. Winton with *Bullet No. 2*, and to get the opinion of those who were familiar with the Ormond-Daytona beach as to its suitability for racing.

At Camden the party was joined by a dozen gentlemen from Philadelphia, among whom were Peter Shields, president of the Cape May Real Estate Company; Col. F. N. Barksdale, of the Pennsylvania Railroad; A. E. Maltby, John N. Wilking, Jr., William H. Rau, J. A. Depew, J. Hiscock, who was in charge of the excursion, and several newspaper men and photographers.

Upon arriving at Cape May the party was met by A. H. Chadbourne of Philadelphia, with his 1905 Winton, and by Mr. Wilking's Winton quad, and driven to the Windsor Hotel, where the evening was spent in pleasant sociability. As the tide was at flood the beach was under water and was not inspected until Friday morning, but after dinner Thursday night the visitors were driven about town by Messrs. Chadbourne and Wilkings, who placed their touring cars at the disposal of the party while the visitors were in town. They were taken for a spin over the new boulevard that skirts the seashore north of old Cape May and paralleling the strip of beach where it is proposed to hold races this summer. The boulevard extends for two and a half miles along the shore and is 102 feet wide, perfectly level and straight with the exception of two or three very easy bends. As this boulevard is on the private property of the real estate company it is believed that races can be held on it when the tide is high on the beach without conflicting with the State law that prohibits racing on the public roads in New Jersey. No expense is to be spared to put this boulevard into the most perfect condition for racing.

Chief interest centered in the beach, however, and on Friday forenoon Mr. Winton and Charles Gondt, from Cleveland, brought out the *Bullet* and half a dozen flights at full speed were made on the sand. Nearly the full length of the strip from the Cape May life-saving station to an inlet at the north end of the peninsula, said to be more than two miles long, was covered in one flight in 1 minute 15 seconds, with a strong south breeze blowing from behind. Unfortunately, the beach had not been measured and marked off with mile and quarter-mile posts, and as none of the cars was provided with an odometer, it was impossible to time any of the runs by miles.

Although the delegation from New York had gone down with misgivings and fearful of a repetition of the Virginia Beach inspection trip, the visitors were much surprised by the character of the beach and soon became enthusiastic over the possibilities for racing at Cape May this season, for the beach apparently meets every requirement for the development of the highest speed of heavy racing cars. It would be difficult to imagine any point in which it could be improved; the only criticism offered was that it is not long enough to permit of anything but one-mile time trials and miles races without turns. A mile course can be marked off that is practically a straightaway, having only a slight convex curve the full length and with half a mile at each end for starting and stopping. When the tide is out the beach is from 250 to 350 feet wide, perfectly smooth, with a very easy grade up from the water and so hard that the wheels of the heaviest cars do not cut into the sand either when the machines are in motion or when they stand for any length of time in one place.



MAGNIFICENT STRETCH OF HARD, SMOOTH BEACH AT CAPE MAY WHERE IT IS PROPOSED TO HOLD RACES THIS SUMMER.

The touring cars ran along the beach loaded sometimes with eight to ten passengers, and frequently stood for intervals of half an hour in one spot. Even the hotel carryalls, with eight or nine persons aboard, were driven along the sand, sometimes close to the water's edge and again close to the board walk that skirts the boulevard 300 to 400 feet back from the surf at low tide, and so long as they kept in motion the inch and a half steel tires did not cut into the sand.

The nature of the sand is quite similar to that of the Ormond beach, composed chiefly of angular particles of translucent silica with minute specks of red, brown and black. The sand particles on the Cape May beach are finer than those of Ormond and of a darker lead color when wet. The tide rises five feet, and when it goes out it leaves the beach moist and firm all the way from the board walk that flanks the beach down to the edge of the water, so that no matter

where a car goes or how long it stands in one place the wheels do not sink into the sand. Underlying the sand at a depth of about a foot is the black clay of the meadow upon which the sea has encroached. Doubtless the presence of this underlying clay plays an important part in causing the sand to retain the water during the intervals between low tides and also in making the beach firm.

Since no part of the beach is soft or dry at any time, racing could be conducted for three or four hours between high tides, beginning as soon as a strip of sand wide enough for racing is left bare by the water. There are no obstructions whatever in the mile straightway; no driftwood, no pebbles, shells or pieces of wreckage. At the south end of the course there are several lines of piles driven into the beach in front of the life-saving station and beyond them a large iron sewer pipe line; but these, it is thought, could be removed if desirable. At the north end of the mile the beach bends rather sharply toward the west and is suitable only for slowing down or starting. At one place near the south end there is a rough place far down toward the water which was caused by workmen digging out some of the underlying black clay soil, but this is to be smoothed off to allow the sand to fill in there again.

In the afternoon the local schools were closed to give the children a chance to see the automobiles "race" on the beach, and several impromptu brushes were run off for their entertainment between the touring cars and the *Bullet*.

When asked his opinion, Mr. Winton said that he was surprised by the beach; that he had come down feeling very doubtful of the result, but that he found the beach even better than the Florida beach. There was only one objection—it was too short to permit of anything but mile events. The wheels of the cars not only did not cut in when in motion, he said, but when a car was allowed to stand for half an hour the tires did not sink more than half an inch, whereas at Ormond the wheels would sink three inches. He thought that in some of the trials with the *Bullet* he attained a speed of ninety miles an hour. In one, he failed to shut off the power soon enough to allow for the large turn he had made before near the end of the strip, and put on the brakes to make a short turn. He noticed that the rear end of the machine slewed around as if it had been on asphalt, throwing up a film of sand surface only quarter of an inch thick, instead of the outer wheels cutting in deeply and threatening to overturn the car.

At frequent intervals there are plank inclines across the board walk, giving access to the beach from the boulevard. The walk itself furnishes an excellent grand stand from which spectators can watch the racing, an iron railing along the edge of the walk serving as a barrier back of which the onlookers can readily be kept by the police.

License Ordinance Not Unconstitutional.

Opinion Written by the Supreme Court of Michigan in Case on Appeal Validates Automobile Regulations in Detroit.

IN our issue of May 18 we published an opinion by the attorney general of Wisconsin, in which he held that the provisions of the proposed automobile law in that state were unconstitutional. Now we are able to place before our readers a diametrically opposed view of the validity of automobile regulations, embodying the much disputed licensing and numbering clauses. This view is in the form of an opinion handed down by the Supreme Court of Michigan in the case of John P. Schneider, an automobile dealer of Detroit, who had had himself arrested for violating an ordinance passed by the City Council regulating the use of automobiles. He had been convicted and fined $25 by the court of original jurisdiction, and it was on an appeal from this conviction that the case was reviewed by the Supreme Court, which confirmed the judgment of the lower court. The case was reported at some length in our news pages in the issue of April 29.

Reverting to the opinion of the attorney general of Wisconsin, previously mentioned, it will be at once apparent this treated of a proposed state law, while the opinion written by the Supreme Court of Michigan discussed the validity of a city ordinance in Detroit. While, however, there is this substantial difference in the material reviewed in the respective cases, and while the interpretations in each instance were influenced by the provisions of the state constitutions, the principle involved is the same.

So great is the interest manifested in this subject at the present time that we here publish the entire opinion, including the citations of court decisions. It is the reverse of the picture presented in the Wisconsin opinion, which was published in full last week.

SUPREME COURT.

PEOPLE
v.
JOHN P. SCHNEIDER,
Respondent and Appellant.

Sitting: Carpenter, McAlvay, Blair, Montgomery and Ostrander, JJ.

Carpenter, J.

Certiorari to the Recorder's Court of the City of Detroit.

Respondent was convicted in the lower court and fined $25 for operating an automobile in the streets of the city of Detroit without having first registered said automobile, and without placing thereon a number, as required by an ordinance of said city. We are asked to set aside conviction upon the ground that said ordinance is invalid.

The provisions of said ordinance material to this decision are as follows:

"Section 1. No person or persons shall drive or propel any automobile or other motor vehicle within what is known as three-quarter-mile circle at a rate of speed to exceed eight (8) miles per hour; nor shall any person or persons drive or propel any automobile or other motor vehicle outside of said three-quarter-mile circle within the city limits at a rate of speed to exceed twelve (12) miles per hour; and at no time shall any person or persons drive or propel any automobile on any street, highway or public place in a careless, reckless or negligent manner. . . .

"Section 2. The owner or driver of any automobile or other motor vehicle shall, before operating the same, register with the license collector his name and residence, together with a description of the vehicle so owned or operated, and the license collector shall enter such name and residence and description in a record kept for that purpose and shall furnish the person so registered with one or more aluminum figures sufficient to compose a number corresponding with the number appearing upon the record so made. The figures shall be four (4) inches high, and three (3) inches in width, for which the person to whom delivered shall pay to said license collector the sum of one dollar ($1). The owner of such vehicle shall place or cause to be placed such figures on the rear of his vehicle in the center of the bed thereof, arranging the same in a horizontal line with a space of one and one-half (1½) inches between the nearest adjacent points thereof, and on a dark background; but said figures may be rigidly attached to the axle or hung under the body of the vehicle; said figures shall at no time be concealed or covered, but shall be kept in plain sight. . . .

"Section 5. No person shall operate or cause to be operated an automobile or other motor vehicle upon any of the streets, alleys, boulevards, park driveways or public grounds of the city of Detroit without complying with the provisions hereof.

"Provided, That the provisions of the ordinance relating to the registration and numbering of such vehicles and notification as to transfers thereof shall not apply to automobiles or other motor vehicles owned by non-resident visitors when said vehicle is kept in the city for not more than two (2) days.

"Section 6. Any person violating any of the provisions of this ordinance shall be punished by a fine not exceeding one hundred dollars ($100) for each offense; and, in the imposition of such fine, the court may make a further sentence that, in default of the payment of such fine, the offender may be imprisoned in the Detroit House of Correction for such offense for any period of time not exceeding three (3) months."

Respondent concedes that part of the ordinance regulating the speed of automobiles is valid. He contends, however, that the provisions respecting registration and numbering are invalid. His objections to the validity of those provisions may be classified thus:

1. The Legislature has never granted to the Common Council of Detroit authority to enact them;

2. They interfere with respondent's constitutional rights.

We will consider each of these objections separately.

1. Has the Legislature authorized the Common Council to enact the provision in question?

This depends upon the proper construction of section 170 of the city charter which gives the Common Council authority "to control, prescribe and regulate the manner in which the highways, streets, avenues,

lanes, alleys and public grounds and spaces within said city shall be used and enjoyed." It is scarcely necessary to say that this gives the Common Council ample authority to enact ordinances which will tend to make streets safe for the traveling public. We may take judicial notice that many of these automobiles may be driven at a speed of at least forty miles an hour. Driven by indifferent, careless or incompetent operators these vehicles may be a menace to the safety of the traveling public. Under its authority to regulate the use of the streets the city may enact ordinances which will diminish this danger. It is clear and it is conceded that it may regulate the speed of automobiles and repress their careless management; but it is contended that it has no power to provide for their registration and numbering. It is not difficult to see that the registration and numbering of automobiles is intimately connected with their safe operation in the streets. In a city like Detroit many automobiles are precisely alike in external appearance. They are sometimes operated by persons whose faces are partially concealed and whose identity is uncertain. Those operators who are most reckless and indifferent—and those are the ones who endanger the safety of others—may violate this ordinance with impunity unless some method is adopted by which they or their automobiles may be identified. The provision in the ordinance for registration and numbering is such a method. It is reasonable to believe that when he knows that the number displayed at the rear identifies his automobile, fear of discovery and punishment will lead the automobile driver to observe the requirements of the ordinance. Indeed, we cannot say that the Common Council did not decide—and did not justly decide—that the provision for identification by registering and numbering was necessary to prevent injury to pedestrians and other travelers from the careless management of automobiles.

If authority be needed for the proposition that the city may enact this provision for the purpose of identifying automobiles which endanger the safety of travelers, Frankford, etc., Ry. Co. v. Philadelphia, 58 Pa. St. 119, is such an authority. The ordinance there in question provided "that each car run shall be numbered and have its number painted in a conspicuous place." The court sustained this ordinance, saying: "It is obvious that its effect is that of police regulation. It clearly furnishes a means of identifying every car which may be run in violation of those rights and public interests which the city is authorized by its charter to maintain and secure." See also Laundry License Case, 22 Fed. R. 703.

But it is said that the provision for registration and numbering is a license and that the grant of authority to regulate gave the city no power to license. If the provision for registration and numbering—which involved no discrimination and requires the payment of nothing more than is necessary to pay for the number which the municipality furnishes—can be regarded as a license, (for conflicting definitions of license see Cooley on Taxation, 3d ed., p. 1137; Adler v. Whitbeck, 44 Ohio St. 539), it is not a license for the purpose of raising revenue. If it were, it might well be contended that it did not pass as an incident to the power to regulate. See Cooley on Taxation, 3d ed., p. 1141; the Laundry License Case, 22 Fed. R. p. 703. It is a license (if a license at all) as a mere means of regulation; indeed, we might say, as already shown, as a necessary means of regulation.

This proposition is self-evident, viz., that the grant of authority to accomplish a certain purpose carries with it authority to use any proper and lawful means without which that purpose cannot be accomplished. If, therefore, the speed of automobiles cannot be effectually regulated without licensing them, the grant of the power to regulate confers upon the city power to license, unless some other provision of law forbids the exercise of that power. I think this conclusion is supported by the following authorities: Russellville v. White, 41 Ark. 485; Ft. Smith v. Ayers, 43 Ark., 82; St. Johnsbury v. Thompson, 59 Vt. 300; Laundry License Case, *supra*.

In the Laundry License Case, which involved the licensing of laundries in the city of Portland, Oregon, it was said:

"The words 'to control' and 'to regulate,' *ex vi termini*, imply to restrain, to check, to rule and direct. And, in my judgment, the power to do either of these implies the right to license as a convenient and proper means to that end. . . . By this means the persons or occupations to be regulated are located and identified, and brought within the observation of the municipal authorities, so that whatever regulations are made concerning them may be the more easily and certainly enforced."

There are cases holding that the grant of power to regulate does not confer upon the city power to license. See Burlington v. Baumgardner, 42 Ia. 673. In that case (that was a grant of authority to regulate taverns and houses for public entertainment) it might be said that the power of regulation might be effectually exercised without licensing. That is by no means an authority for the proposition that when regulation cannot otherwise be effectual, the grant of power to regulate does not carry with it power to license.

We do not think that any of the cases cited by respondent are opposed to this conclusion. The cases most nearly in point are Chicago v. Collins, 175 Ill. 445; and Chicago v. Banker, 112 Ill. App. C., p. 94.

In Chicago v. Collins, the Supreme Court of Illinois held invalid an ordinance of Chicago which imposed a license fee of $10 on each vehicle using the streets of the city. The grounds of that decision were these: (a) The city had no authority to prohibit, and therefore no authority to license "an ordinary method of locomotion, or even an extraordinary method, if it is not of itself calculated to prevent a reasonably safe use of the street by others." (b) The city had no authority to raise a revenue by taxing the use of vehicles which were already subject to taxation under the general laws of the State. That decision has no application to the case at bar. It does not hold nor indicate that municipal authorities may not (if in their judgment such a requirement is essential to safe travel) exclude from their streets automobiles not registered and numbered.

Chicago v. Banker, *supra*, is more nearly in point. In that case it was decided that an ordinance of the city of Chicago compelling one "who uses his automobile for his pleasure and business only to submit to an examination and to take out a license (if the examining board see fit to grant it) . . . is beyond the power of the City Council and is therefore void." Without approving that decision, it is sufficient to point out that the ordinance in question in that case goes further than the ordinance in the case at bar.

We conclude, therefore, that the Common Council of the city of Detroit had authority to provide for the registration and numbering of automobiles under the grant of power to regulate the use of the streets, unless the exercise of that power is forbidden on some constitutional ground.

2nd. Is the ordinance constitutional?

Respondent contends that the ordinance violates Section 26, Article VI., of our constitution, which forbids "unreasonable searches," and Section 32 of Article VI., which reads: "No person shall be compelled in any criminal case to be a witness against himself or be deprived of life, liberty or property without due process of law." We deem it sufficient to say that the provision requiring one operating an automobile on the street to display thereon a number furnished by the municipality is not an unreasonable search. The statement in the opinion of this court in Robison v. Haug, 71 Mich. 38, relied upon by respondent, which denies the right of the public to look into one's private place of business or residence, manifestly has no application.

We think it equally clear that the ordinance does not compel an automobile owner or operator to testify against himself or deprive him of any property rights. It is merely a justifiable exercise of the police power in the interest of the safety of the traveling public. We think it unnecessary to discuss any other objection.

The conviction is affirmed.

CENTRIFUGAL WATER PUMP.

The circulating water pump illustrated herewith is of the type known as centrifugal, and is the one used on the Locomobile car, built by the Locomobile Company of America, at Bridgeport, Conn. Water is

CENTRIFUGAL PUMP OPEN FOR INSPECTION.

piped to the central opening seen in the left-hand half of the casing and is thrown outward by the rapid revolutions of the radiating blades into the circular channel near the periphery of the pump. This channel constantly increases in size from the point where it begins, under the end of the blade that is uppermost in the right half of the case, to its maximum diameter at the point of discharge, which is at a tangent to the rotating part of the pump. Pumps of this type are usually run at high speed. They have several advantageous features: they are simple and free from small parts that might get out of order, and are not easily stopped by dirt in the water, the passages being large and direct. Moreover, as the blades do not entirely close the passages, the cooling water can circulate through the pump by natural thermo-siphonic action, even should the pump cease action from any cause.

Auto tires have had all sorts of punctures except the sort produced by a goat's horn. Now the new variety has come. William Osman, of Sigmunds, speeding along in his car near home, collided with a goat. Afterward one horn of the "Billy" goat was found sticking in a forward pneumatic tire. The goat, half-skinned alive, lay at the roadside.—*Allentown Dispatch to Harrisburg (Pa.) Telegraph.*

Diary of the Transcontinental Race.*

By PERCY F. MEGARGEL.

TUESDAY, May 16.—On the road west of Earlville, Ill., Tuesday afternoon.

No, we have not broken down, as I have informed some three dozen farmers who have passed us during the half-hour we have been anchored here, but *Old Steady* is missing more explosions than we deem necessary, and Stanchfield is trying to locate the source of the trouble.

It has rained all day and, in fact, ever since 5 o'clock yesterday afternoon, and the roads are seas of mud; not the awful deep sticky mud of southern Illinois and Missouri that I experienced in my wanderings in the *Pathfinder* last summer, but mud deep enough and sticky enough to be extremely troublesome, especially as I figure that Huss must be some ten miles ahead of us at this writing, and to the best of my knowledge his car is running perfectly. The two cars kept together all this morning, first one and then the other leading, and we had dinner together at Earlville, both of us leaving at a given time. There is a circus in Earlville to-day, and despite the rain and mud the little town is pretty well filled with visitors, and teams are numerous on the roads leading to the circus lot.

We were indirectly responsible for a smash-up this morning, although I am glad to say nobody was injured and the damage was comparatively slight. Our little Oldsmobile had just rounded the turn into Earlville when we noticed a handsome gray colt hitched to a light top buggy coming down the road. The animal showed signs of fear and we slowed up, finally throwing out the clutch and coming to a standstill. The driver was game and forced his horse to pass the machine. No sooner, however, was the little gray past *Old Steady* than she commenced to kick. Again and again both hind feet crashed into the dash and whiffletree, smashing the front of the carriage in, tearing away an entire section of fence and causing a stampede in that neighborhood.

This morning while our car was trailing *Old Scout*, a woman driving a spirited horse hove in sight. The horse, after taking one look at the two sputtering cars, started to run away. The woman clung to the reins and two pretty young women—the other occupants of the carriage—with white faces awaited the final crash. It did not come, however, as Milford Wigle, Huss' mechanician, jumped out of the car and by a desperate sprint across lots managed to grasp the runaway's bridle. He was dragged some distance, but retained his hold and brought the frightened animal to a stand. Wigle certainly showed that he is made of the right stuff, and he and Huss are going to prove a mighty hard proposition to beat into Portland.

*Continued from page 622, issue of May 18.

WHERE THE GRAVELED TURNPIKE ENDS IN THE FLAT COUNTRY OF NORTHERN INDIANA.

In the Black Illinois Mud.

GENESEO, ILL., May 17.—Both cars together once more, and both crews quartered at the same hotel, after the shortest day's mileage since leaving New York, and the hardest work. Illinois mud, even when taken at a racing gait, brought our mileage down to 64 miles for the day, and we worked tooth and nail ever since 5 A. M. It is now 10:30 P. M., and we have just arrived in town.

Old Steady has run like a top all day—never missed an explosion, and the way she pulled Stanchfield and myself through mud that hid the hubs from view on more than one occasion, has caused the Oldsmobile to rise greatly in my esteem. Stanchfield is living up to his name—the best all-around man the Lansing factory could furnish for the trip, and with one-quarter of the distance between New York and Portland covered, and both cars on even terms, it is still anybody's race.

Since leaving Chicago we feel that we are getting into the Western country, and the horses we meet now are only half broken as a rule, and cut up badly upon sighting an automobile, bucking and kicking being indulged in to a considerable extent.

The mud all day has been that sticky, thick, black mud that only Illinois and Missouri can boast of. To get through it we were obliged on several occasions, to use blocks and tackle. The water in our tank boiled, but the engine never faltered, although every one of the four wheels was so stuck up with mud as to render the spokes invisible. The cars and occupants were so covered with mud when we arrived here to-night that we were hardly recognizable.

PLOWING THROUGH MUD AND WATER ON THE NEW YORK-CHICAGO HIGHWAY.

Escorted into Davenport.

WILTON, IA., May 18.—Thursday night finds both cars in Wilton, a little town of some 1,000 inhabitants.

We ran into Davenport, to-day in time for dinner, and found an enthusiastic crowd of automobilists, including a number of ladies, awaiting our arrival. We were escorted from Moline across the Mississippi river into Davenport, and after refilling our tanks, washing the mud off of the radiators and partaking of a hearty luncheon at the

restaurant kept by Mr. Robertson, secretary of the Davenport Automobile Club, we left town under escort.

This morning's run was one of the most difficult we have yet undertaken. It was through the lowland along the banks of the Rock river, the waters of which frequently overflowed, and sometimes for long distances the roadbed would be covered with water, to what depth we could only guess. At one stage of the morning's trip the water flowed into the car and we got our feet wet, yet the engine never missed a stroke. Now the question we are asking each other is, how could this happen without wetting our carbureter? The apron under the car is the only thing we can think of that saved us from getting stranded.

Immediately upon getting into Iowa the black, sticky mud that had been clinging to our tires and ourselves disappeared and a yellow clay soil composed the roadbed. It was hardened and made pretty rough going, but we were able to use our high speed again, and that readily compensated us for the jolting we received.

Wilton is a temperance town, but a peculiar yellow liquor, labeled "IT," looks, smells and tastes considerably like beer.

We found a bridge down this afternoon, and were obliged to resort to block and tackle to get *Old Steady* back in the road.

Varied Sentiments of Iowans.

Brooklyn, Ia., May 19.—We have just arrived at the hotel here after passing entirely through the town, and half a mile into the country, without knowing we had come to Brooklyn.

All day the wheeling has been most difficult, as the roads were badly cut up when soft and have since hardened, with the ruts deep and narrow, and the soil for the most part is of yellow clay. We fell behind about an hour to-day, owing to our radiator coils being so covered with mud that our cooling apparatus failed to perform its work. We got under the car, and with screwdriver worked industriously picking the mud from the pipes for more than sixty minutes. During this time *Old Scout* secured a lead of some fifteen miles.

The inhabitants all through this section are watching the race with interest, and take pains to inform the occupants of the rear car just how far in advance the other machine is, as we passed through their towns. The horses all through Iowa cut up badly upon the approach of an automobile. One old farmer with long whiskers of the Populist variety, for whom we had stopped our car to get his horse and mule combination past, was highly indignant at "an automobile from New York being on his road," as he termed it. "Do you know the law in this state compels you fellows to run your machine in the field until we can drive by?" said whiskers. When we informed him we knew of no such law, and that our automobile was not afraid of his team, even if they were scarecrows, he wanted to "lick the two of us," as he put it. We found several bridges down to-day, and had to resort to our blocks and tackle in hauling *Old Steady* through the muddy river beds.

Wherever we stop our car it is at once surrounded by an enthusiastic crowd of spectators who continue to stare at the mud-stained, battered Oldsmobile, until we eventually haul out of town. One motherly old woman who passed us as we were working on our car by the roadside exclaimed: "You poor fellows, I'm awful sorry for you." Despite our hard trip both Stanchfield and myself are enjoying excellent health. In fact, I think I have gained about three pounds on the trip thus far, and, as our car left New York carrying some forty pounds more live weight than our rival, if this increase keeps on we will be sadly handicapped by the time Portland is reached. Stanchfield reminds me as I write this that we still have the desert to cross.

Roughest Roads Encountered.

Des Moines, Ia., May 20.—Seventy-two miles was the best we could make to-day, and the going was the hardest yet. The roads are full of ruts made by narrow wagon tires cutting deep into the roadbed when the ground is soft. Our tires suffered more from the run to-day than during all the 1,500 miles previously traveled. The front tires are now worn through both rubber and canvas on either side, and our rear set has fared little better. Any one who has ridden a few miles over roughly cut-up roads can imagine what seventy-odd miles of such riding will do to tires, machine and tourists. We trailed *Old Scout* all the morning, caught them at noon and passed them when one of their rear tires went flat some miles out of Des Moines.

One of the worst mudholes thus far encountered was the Skunk river bottoms, several miles east of Altoona. Huss and I agreed to help each other across, or neither of us would ever have reached the other side. First, one car would plunge into the water and mud until stuck, then we would rig our blocks and tackle, attach it to the car axle and bring the other end back to the car still on dry land. By all of us pushing, and the free car towing, we managed to work our way across a swamp that every one told us was impassable. All of us worked in water and mud nearly waist deep. My rubber boots were not nearly high enough to escape wet feet, as the water simply poured in over the tops, and when I reached Des Moines I was able to pour several quarts out of each boot after nearly an hour's work in pulling the boots off. The other boys, clad in low shoes and leggins, made no effort to escape with dry feet, and all were soaked within a few minutes. The water was so deep that at one time all of the four wheels were out of sight, and a stream flowed freely through the flooring of the wagon, soaking everything, filling the carbureter with water and short-circuiting the battery.

MEGARGEL AND STANCHFIELD LEAVING WEST LIBERTY, IA., IN MUD-COVERED "OLD STEADY."

We had figured on reaching Des Moines by 1.30 in the afternoon, and had wired the local Oldsmobile agent to that effect. A large delegation of local autoists had run out toward Altoona to meet us, but as it was after 8 o'clock in the evening when we finally reached the city's outskirts, we were obliged to run in unescorted.

Route to be Followed West of Omaha.

INTEREST in the progress of the transcontinental tourists naturally increases as they gradually leave behind the frequented roads of the east and middle West and strike the vast and unfrequented stretches of the far West—the *terra incognita* of the American automobilist.

The general course of the proposed route has already been published and now, through the courtesy of James W. Abbott, the special agent of the United States Department of Agriculture in the public roads bureau, we are able to place before our readers a more detailed statement of the route and the stopping places on the way. The selection of the route has been in his hands, and the following description is the result of a special study of road conditions, and of painstaking inquiry.

From Omaha west to Granger, Wyo., a distance of about 860 miles, the route will be practically that of the old Overland Trail now followed by the Union Pacific Railroad, writes Mr. Abbott. This, as I understand it, is the route which was followed between those points by Dr. Jackson two years ago. It runs through Fremont, Columbus, Central City, Grand Island, Kearney, North Platte, Julesburg, Sydney, Cheyenne, Laramie, Medicine Bow, Rawlins, Wamsutter, Bitter Creek, Point of Rocks, Rock Springs and Green River.

From Omaha to Cheyenne, a distance of about 520 miles, very little hilly road will be encountered. Unless there should be considerable rain just before passing over it this road will probably be in very fair condition for an automobile. Gasoline can be obtained every few miles.

West of Cheyennne there will be some hilly country but all the agents of the Union Pacific railroads along this part of the railroad say that there will be no serious obstacles encountered. It is my belief that it will be found that the road from Omaha to Granger will present less obstacles than the route from New York to Omaha.

At Granger the road branches off towards the northwest and follows practically the route of the Oregon Short Line to Pocatello, 215 miles from Granger. From the best information thus far obtainable, I have concluded that it will be best to leave the main line of the Oregon Short Line system at Pocatello and run north along the Butte branch to Blackfoot, Idaho. There it will turn to the left and follow the Mackay branch of the Oregon Short Line to Arco, where it will leave the railroad for the first time and run across the country southwest to the Ketchum branch of the Oregon Short Line which it will strike probably at Bellevue. The route will then follow this branch north to Hailey and again leave the railroad and run across country to Boise City, the capital of the state of Idaho, a very thriving commercial center. The distance by this route from Pocatello to Boise City will be, perhaps, 250 miles.

The first stretch away from the railroad from Arco to Bellevue will be about 50 miles and the next stretch from Hailey to Boise, perhaps about 100 miles. The country between Pocatello and Boise will not offer any serious obstacles to the automobiles. There will be no hills of any importance and the only trouble of any kind which I anticipate, will be from short stretches of sand. As the cars will be provided each with false tires, which can be put on to use in sand, I do not anticipate any serious hindrance from this cause.

From Boise City the route will run across the country northwesterly to Ontario on the Snake river in eastern Oregon, a distance of about 50 miles. Here the railroad must be left. From Boise to Ontario the route lies through the Garden of Idaho where the boys will pass some of the most fertile and productive fruit, grain and alfalfa ranches to be found anywhere in the United States.

After leaving Ontario the route rises gradually until the summit of the Cascades is reached, about 360 or 370 miles from Ontario. For the first 300 miles of this route the grades for the most part are easy. There will be some short stretches where divides between unimportant streams are crossed—where grades of perhaps 15 per cent. will be encountered. It is a good freighting road and it is customary to load from 1,200 to 1,500 pounds of freight to each animal. The road is so good that so far as my knowledge of freight rates goes, lower prices are paid per ton mile in central Oregon than anywhere else in the United States. There will be, in spots, a little sand encountered, but no fords and in fact I have been unable to learn of a single ford which will have to be crossed anywhere between New York and Portland. Certainly no ford of serious moment.

There are no better cattle ranches in the world than the boys will pass on this trip west of Ontario. It will be a new experience to them all, and there is no other portion of the United States where physical conditions for long distances resemble those on this route. Many thousands of acres of this land are involved in the charges of fraud which the Government is now pressing against so many of the men who have stood high in that state.

The Standard Oil Co. is taking a great interest in this race and have undertaken to see that supplies of gasoline and mobiloil are distributed at convenient distances throughout this entire stretch.

About 150 miles west of Ontario the town of Burns will be reached. This is the county seat of Harney county, right in the center of the cattleman's paradise. It is a country of grass, grain and water. The population is scarce, but many of the people are prosperous and a few are quite rich.

About 150 miles northwest of Burns they will reach Prineville, the county seat of Crook county, another one of Oregon's cattle counties. The real climb towards the summit of the Cascades will not begin until they get some distance west of Prineville, perhaps 25 or 30 miles. The pass which they will cross at the summit of the Cascades is a little more than 4,000 feet above sea level. On the summit of this pass they will find scenery as strikingly picturesque as can be found anywhere in the United States.

All the way to the top Mt. Hood will be seen at intervals, a peak from which the snow never melts. Mt. Hood, itself, is one of the grandest spectacles in the United States. It rises to a height of nearly 11,500 feet, and is the pride and glory of Oregon.

Descending on the western slope of the Cascades they will go down what is known as Seven Mile hill, a drop of perhaps 2,000 feet in that distance. There will be some pretty steep pitches on this hill, but none which make it impracticable for teams. After the foot of this hill is reached the slope to the town of Lebanon where the railroad is first reached is gentle and many of Oregon's most tempting resorts will be passed.

From Lebanon the route lies through the famous Willamette valley, which is the garden of Oregon, as Boise and Fayette valleys together constitute the garden of Idaho. Of course, much snow falls upon the Cascades during the winter and in some years this road remains closed because of snow until well into June. During the past winter the snowfall in that region has been light and this road is now open.

The information obtainable about crossing the streams on this route from Prineville to the Willamette valley, has been meager, but I have the assurance of one of the most enthusiastic autoists in the Willamette valley that the route is not only open but practicable. The only alternative would be a route leaving the railroad at Baker city, which is the metropolis of the eastern Oregon mines. From here it would run westerly through the Blue mountains over a road which in places is steep and winding, and it would finally cross the Cascades (if open) just at the foot of Mt. Hood. As the place where it would cross is nearly 100 miles farther north than the route they propose to take, and the pass considerably higher, it is reasonable to believe that snow, which increases rapidly

with both latitude and altitude, would prove an effectual barrier.

From Lebanon to Portland the route passes through Albany, Salem and Oregon City, three of the most prosperous towns of the Web-foot state. Salem is the capital and the largest city in Oregon, outside of Portland. At Salem the boys will be greeted by many enthusiastic automobilists, and will probably be escorted from there to Portland; at least the leader will. But if they keep as close together as they have thus far, it will not take a very long procession to include both.

ROUTE DOWN THE WILLAMETTE.

The route down the Willamette valley will probably be in good condition. The rainy season in Oregon should have fully passed before they reach the Willamette valley, but it will be too soon for the heat to have dried up the roads and to have produced the dust which last year became an insufferable nuisance after the first of July. Of course, vagaries of rain occur in any country and it is only the freak prophet who can tell with certainty, months in advance, what may be expected. It might happen that this year the mud would be as deep as the dust was last year, in which case their route down the Willamette would be as discouraging as any of the black mud in Illinois or Indiana.

This will be the first automobile trip ever taken between the Columbia river and the Atlantic ocean, but with the ice once successfully broken, we may expect in the not distant future that such trips will become popular summer outings and that they will result in benefit in many ways, not the least important of which will be to the highways which the route will follow.

De Dietrich G. B. Car.

One of the De Dietrich cars entered for the Gordon Bennett elimination trials in France is illustrated herewith. The machine is an enormously powerful one, developing, it is stated, 135 horsepower. In general form, the car follows the accepted type of powerful racing machine, having a huge flat-fronted bonnet with radiator in front, small, low seats for the driver and his mechanician, and large cylindrical gasoline tank in rear. The motor has four cylinders with a bore of 190 mm., or about 7 1-2 inches, and a stroke of 150 mm., equal to a trifle more than 5 7-8 inches—a pronounced example of motor in which the bore of the cylinder measures more than the stroke of the piston. The drive is by side chains, and the transmission gear provides four forward speeds and a reverse. The rear wheels are 920 mm. (about 36 inches) in diameter, and have tires 120 mm. (about 4 3-4 inches); the front wheels are 870 mm. (about 34 inches) in diameter, with 90 mm. (about 3 1-2 inch) tires.

DE DIETRICH 135-HORSEPOWER GORDON BENNETT RACER WITH GABRIEL AT THE WHEEL. A COMPLETE CHANGE OF APPEARANCE FOR THIS WELL-KNOWN MAKE WHICH WAS LAST TO ABANDON THE COIL PIPE COOLER.

AUTOMOBILE NOVELS.

The automobile, like most things that are new, has to stand for a good deal of good-natured ridiculing at the hands of writers; and perhaps this is a good thing, serving to counterbalance to some extent the extreme seriousness with which some persons—particularly policemen and magistrates—insist upon regarding the modern Pegasus. "Charles, the Chauffeur," by S. E. Kiser, is a good example of a literary extravaganza, with the automobile for a theme. It relates the adventures of a chauffeur who counts as lost that day whose setting sun sees no victims of his desire for speed; and who, incidentally, falls in love with the dashing young widow who employs him, and who is equally "sporty" and speed-loving. The book has a broadly satirical aspect that adds to its interest in the eyes of the automobilist; it is good laughing material for any one. "Charles the Chauffeur" is published by Frederick A. Stokes & Co., New York. It is illustrated by a profusion of clever drawings.

The automobile, not content with finding its way on wheels throughout the country, is finding its way into modern fiction in ever-increasing numbers, and no wonder, for it is of the greatest assistance to authors in complicating plots and straightening out desperate situations at the last minute when no other earthly power could do the trick. Very few plots were ever much more complicated than that of "Lady Penelope," a novel by Morley Roberts, illustrated by Arthur William Brown, in which the automobile plays a very important rôle. The story of how a girl with strong ideas of her own handled a whole flock of lovers, and finally fell a victim to her own theories regarding their management, is intensely amusing, and the author's use of the automobile in extricating the characters from the tangle into which he has got them is decidedly skillful. Not the least attractive feature of the book are the illustrations. Published by L. C. Page & Co., 200 Summer street, Boston.

The Midgets can afford to give away a game of ball occasionally, as they are the only team in northern Iowa whose manager rides in an automobile.—*Gilmore City (Ia.) Globe.*

French Makers Concerned Over Competition.

Some Advocate Building Small, Cheap Cars to Combat America and Germany—Want Reliability and Truck Trials.

From Our Own Correspondent.

PARIS, May 8.—In all the industrial and commercial centers of France it is being said that the trade of France is diminishing, that the foreigner is invading the country and that national industries are in danger. In order to inquire into the matter, and to bring to light such facts as will enable government to legislate more effectively and business men to compete with their foreign rivals on a more equable basis, an industrial congress is about to be held in Paris, having at its head M. Trouillot, late minister of commerce, seconded by numerous deputies, members of late governments and presidents of chambers of commerce throughout the country.

A feeling, if not of uneasiness, at any rate of inquiry, has passed through the automobile industry as a result of this movement. The activity displayed by American, English and German automobile manufacturers has led the French builders to ask if there is not danger of these foreign markets being closed to their cars in the near future. Road racing has been much criticised as encouraging the construction of a type of car having nothing in common with every-day requirements, and calls are made for fewer speed tests and more "reliability trials" in which the all-round qualities of a car will be developed. It is no secret that this spirit was manifest in the recent squabble over the Gordon Bennett question. All the officials of the Automobile Club of France are not in favor of keeping up costly road races. The Marquis de Dion, vice-president of the A. C. F., has never lost an occasion of pointing out the need for reliability and regularity tests, and has publicly declared that in this matter Great Britain is working on correct lines.

The neglect of the small car and of industrial vehicles has been pointed out as dangerous to the French industry. Certainly heavy wagons have been almost entirely neglected in France, and it is with a view to turning the attention of the public and automobile constructors toward this class of vehicle that the Automobile Club of France is now paying so much attention to the organization of its 'bus and wagon competition to be held in August. It is recognized that the voiturette, or runabout, must be developed if it is desired to keep out American and British competitors. De Dion-Bouton, who have always paid much attention to small cars, intend to produce next year a six-horsepower car to list at $600. The Mercedes firm is also said to be studying a six to eight horse power runabout to be put on the market at $650. At the Paris agency, however, this rumor is declared unfounded.

Not all of the great French builders are in favor of constructing small cars at a popular price, however. M. Charron, of the firm of Charron, Girardot & Voigt, voices the opinion of a large body of constructors when he declares that they prefer to deliver chassis at $2,000 rather than industrial vehicles or small, cheap cars. He holds that the wealthy class, able to order automobiles of the highest quality and best finish, is still sufficiently numerous in France and America, and that there is no need to cater to the man of moderate means. It is more profitable to convert the rich from horse-drawn to mechanically driven vehicles than to construct small cars for the doctor or lawyer.

The Cottereau firm, on the contrary, believes that the progress of American and British constructors in popular cars is a serious danger to the French industry, and the fear is expressed that the French may be left as the producers of automobiles for only the wealthiest classes. M. Max Forest, of the Bolide firm, contests Mr. Charron's statement that small cars are unprofitable. He maintains that the same care is required in the construction of a small vehicle as in a large car; but that by building in series these cars form a profitable venture. They find a ready sale, and have no need of costly road races to prove their qualities.

With a view to obtaining information on the future of French cars in America, a representative of THE AUTOMOBILE waited upon M. Emile Stern, the selling agent in France and America of Leon Bollée cars. Laying before him an extract from a Chicago daily paper in which it was stated that automobiles were exhibited in New York at $1,000 which could not be built in France for less than $3,000; that the French industry was heavily handicapped by government taxes; that the price of raw material was going up and that strikes had disorganized the labor market, an expression of opinion was asked for. After carefully reading through the article in question, Mr. Stern ejaculated: "Bluff; absolutely untrue." Then dropping into his native tongue, he gave in voluble French the reasons for the faith which is in him.

According to him, it is impossible to construct reliable automobiles in Chicago and the western states for the simple reason that no roads exist on which a vehicle can be run at a speed of twenty-five miles an hour. In the eastern states roads are somewhat better, but there is in New York, as indeed, in the whole of the states, a lack of skilled adjusters, without which it is impossible to build a smoothly running automobile. "Tenez," said Mr. Stern, growing enthusiastic and rushing outside his store, where a 40-horse power double phaeton had just drawn up and was ticking away with the regularity of a watch, "America has remarkable machine tools, which we have extensively adopted in our works, is admirably fixed for turning out series of machine parts, but cannot construct an automobile to equal this. Machine tools are not all that is required; a large amount of hand labor is necessary in adjusting and fitting together the parts, and America does not yet possess these skilled fitters. Although we have never attempted to obtain trade by cutting down prices, the cheapness of labor in France enables us to compete easily with America. The most skilled fitters in our provincial works are paid from eight to ten cents an hour, and these rates are not merely local, for De Dietrich and other large firms in the provinces pay the same rate."

Replying to the inquiry: "Is the French automobile industry not burdened with heavy government taxes?" Mr. Stern laughed in a way that would lead one to believe he was not personally burdened with anything, and explained that a "patente" or trading tax is levied on every industry in France. The amount of the tax varies with the nature and importance of the trade, but in no case is it excessive, and there is no special tax on the automobile industry. Mr. Stern admitted that in the future Americans might succeed in driving French constructors out of the American market, but this was so far ahead that he believed he had yet time to sell hundreds of machines on their merits of mechanical perfection.

At the Hotchkiss agency the inquiry, "Can the United States produce cars at $1,000 which in France cost $3,000?" was met with: "Not without losing money on the transaction." Here, also, the opinion was expressed that French cars would continue to hold their own in America for several years on their merits of superior construction and high finish, notwithstanding the 45 per cent. customs duty.

Americans have endeavored to obtain a footing in France by supplying the demand for small cars, a branch which has been neglected by French builders. The cars represented are the Oldsmobile, the White steam cars, and Waverley electrics. The first is the best known, having been on the market for a long time, and obtained a good standing by means of its efficient representation. About two years ago an effort was made in Paris to form a company for the construction of the White steamer in France. The matter, however, never got beyond the initial stages. The Locomobile also made a similar attempt without much result.

To a representative of THE AUTOMOBILE the White agent expressed himself as convinced of the success of this steam car in France, if only governmental officials could be made more reasonable. The American vehicle is slightly lower in price than the

best French steam cars. Every steam engine, of whatever nature, must be approved by the government officials before being put into use. Thus every automobile steam car must be tested and stamped by the Service de Mines before it can be run in France. The Service de Mines is the *bête noire* of the White steamer. A car is sold; permission is demanded to run it; but, whether on account of the nationality of the car, or owing to the inherent leisurliness of French adminstration, the authorization can never be obtained without weeks of weary waiting. When finally obtained, the same proceeding must be gone through for the next car, even if identical in construction. The mechanical features of the White have caused it to find favor among lovers of steam, the Paris General Omnibus Company, which is at present experimenting with different types of cars with a view to the abolition of horse traction, has asked that it be submitted to them for trial.

Only one English firm is represented in France—the Wolseley.

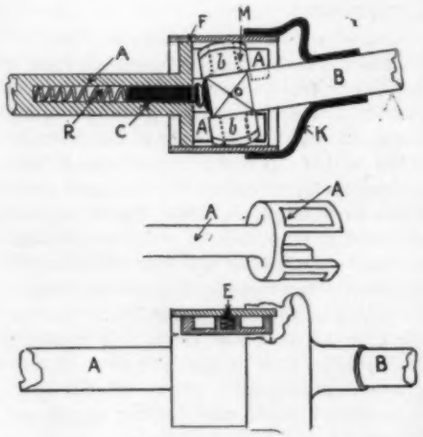
French customs duties are not so heavy as those levied on foreign vehicles coming into the States. Automobile bodies pay 30 per cent.; axles pay three dollars each, and chassis $5 per 100 kilos (220 pounds).

De Dion Universal Joint.

The universal joints are the essential feature of the De Dion system of driving by means of live shafts from a suspended differential to the road wheels through hollow spindles in a dead rear axle. As the differential is suspended in a different horizontal plane from that of the wheel hubs, the joints are continuously working and are submitted to very severe shocks. This necessitated a thorough study of the question by the De Dion people, which led them to design a substantial and light universal joint with long life and easy drive.

The driving shaft—which may become the driven shaft, the joint being perfectly reversible—is *B* and the driven shaft is *A* in the accompanying drawings. The shaft *A* ends in a claw-shaped steel forging (see middle drawing), and it receives in the claw the cross-bar at the end of *B*. Shaft *B* is squared at the end and carries two short, cylindrical projections *b*, *b*, integral with it. These are used as bearings for the thimbles *M*, which fit over them freely. These thimbles are squared and fit snugly in the claw at the end of *A*, while their outer ends are rounded as shown, as if forming portions of the surface of a sphere having a center at *o* and of a diameter equal to the inside diameter of the sleeve *F*, which covers the mechanism and keeps the parts in place. This shape of the thimbles permits doing away with all other means of centering the joints since, no matter what the angle of the two shafts may be within their actual range of motion, the ends of the thimbles are always in contact with the sleeve. This joint also allows for variations of distance between the ends of the shafts, as the thimbles slide freely longitudinally in the claw *A*, while lateral motion is permitted by the rotation of the thimbles on their bearings.

To prevent noise a small, rounded projection having its center at *o* is left at the end



DETAILS OF DE DION UNIVERSAL JOINT.

of *B*, (see third drawing), and against it constantly bears a plunger *C*, pushed by a stiff coil spring *R*, contained in a hole drilled through *A*. As each end of shaft *B* is pushed by a spring, it is kept from moving too freely longitudinally and its motions are balanced.

A rubber or leather cover *K* fits tightly on the shaft *B* as well as on the sleeve *F*, and keeps the joint full of grease; thus the joint is perfectly lubricated, its work is not impaired and the joint can be examined readily and the lubricant renewed.

To dismantle the joint it is necessary only to remove the sleeve *F*, which is an easy fit over the claw *A*, and is held by a small head *E*, which is kept in place by a spiral spring. By depressing *E* with any pointed tool the sleeve can be pushed off by hand and the end of *B* pulled out of the claw sidewise for inspection.

This joint, which is of simple construction and inexpensive to make, consisting of only three main parts, is also remarkable for its freedom from wear and its easy movement in all directions.

Plans of A. C. A. Clubhouse.

(*Concluded from page 637.*)

assembly room for demonstration purposes, lectures and the like; and there will be electric current supplied conveniently for lectures and experimental purposes. Other electrical service will include a complete telephone system throughout the building; annunciators for calling employees, and watchman's signals.

Special attention is being given to the comfort of ladies who may use the clubhouse. A handsomely fitted waiting room for their use will be located under the landing of the great staircase. It will contain every convenience, and will be lighted by a large glass dome skylight.

The Union Depot Carriage and Baggage Company will make a trial of motor cabs to take the place of its regular carriages, and will soon have six of them on the streets for that purpose. If they prove to be successful, more will probably be introduced in the near future.—*Kansas City Journal.*

New type of railway motor omnibus supplied to the English Great Western Railway Company by the Wolseley Motor Company. It has 28-30 horsepower four-cylinder horizontal motor and has seating capacity for twenty-four passengers. The change-speed gives four forward speeds. A number of similar vehicles are being used by English railway companies for service in outlying districts where there is not the need for a regular train service.

Studebaker 20-Horsepower Touring Car.

THE car illustrated and described herewith is typical of a class—*voiture legère*—that has become justly popular among automobilists, combining, as it does, most of the advantages of both larger and the smaller machines. While it has ample power for all sorts of roads, and has a carrying capacity equal to most of the heavy touring cars, it is light and not awkward to handle in crowded traffic. While affording nearly all the advantages of the bigger machines, it is less expensive to operate and maintain, and in case of accidental damage the repair bill is not likely to be as heavy as it would be if the car were larger and the parts, therefore, more expensive. The machine here described is the Studebaker 20-horsepower light touring car, built by the Studebaker Automobile Co., South Bend, Ind.

The frame of the Studebaker car is of cold pressed steel channels four inches deep at the center and tapering toward the ends; the top edges only are tapered, the under edges being straight. The ends curve downward and are finished by the addition of the spring hangers, made of steel forgings hot riveted into place. The main frame members are not offset, being parallel from end to end. The front transverse frame member is dropped to make room for the radiator; the rear cross piece is straight. A heavy and deeply dropped intermediate cross member supports the rear ends of the two sub-frames which extend from the front, the front cross member running parallel with the side frames; this provides a solid support for the motor and transmission. Corners are braced by heavy angle plates of forged steel hot riveted to the frame members.

All springs are of the semi-elliptical form that is usually accepted as the standard for automobile work, and are solidly pivoted at the front ends and shackled at the rear ends. The joints by which the springs are hung are made with finished steel bolts and bronze bushings. The rear springs are 45 inches long and 1 3-4 inches wide, while the front springs are of the same width and 40 inches long. The front springs are directly under the frames, while the rear springs are offset, coming outside the vertical plane of the frames.

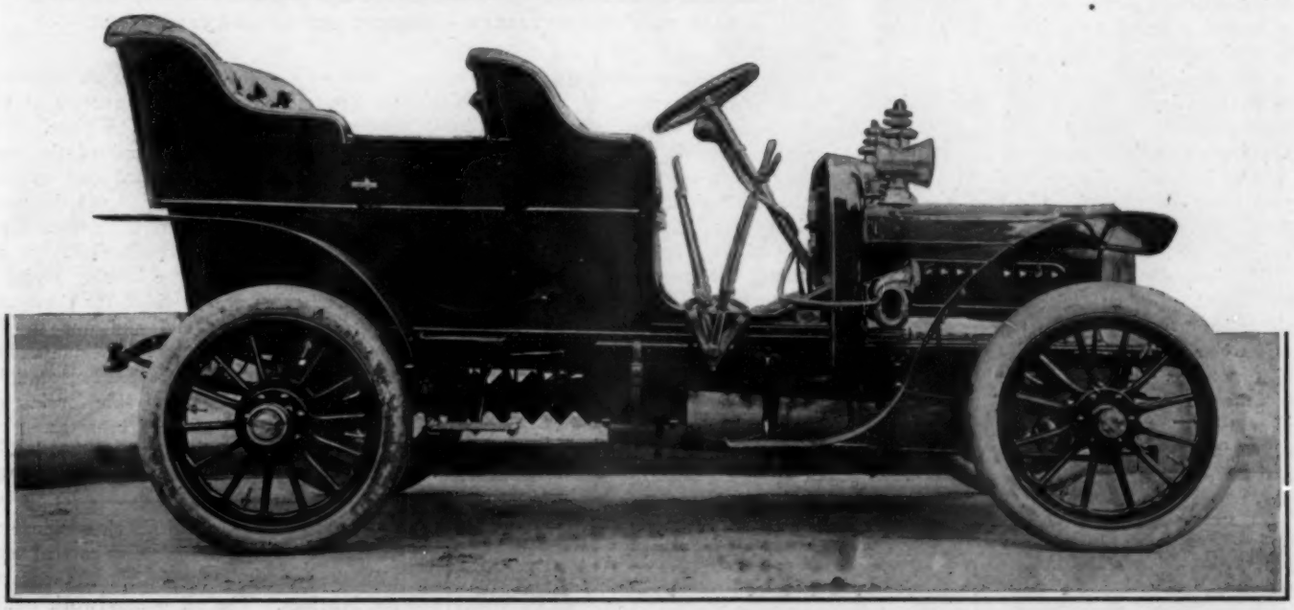
Popular American practice is followed in making the front axle of heavy steel tubing, the forged steel spring seats being brazed on the tubing. Fifty-carbon steel forgings are used for the steering pivot brackets, which are brazed into the ends of the front axle; and the knuckles are of the reversed Elliott pattern—that is, the yoke is next to the wheel hub and the pivot is supported from the axle end. A very solid form of construction is used in attaching the axle ends, these being fitted over the axle tube instead of inside, and brazed in place. The steering arms extend forward from the lower ends of the yokes and are connected by a heavy tubular rod with yoke ends.

The rear axle is of the live type, the drive being by propeller shaft and bevel gears. The outer sleeve is of heavy tapered steel tubes brazed into the cast-steel central casing which contains the bevel gearing and the differential. This casing is split vertically in the center. A heavy steel truss rod passes under the casing and adds to the stiffness of the axle as a whole. The axle tubes extend through the rear wheel hubs and carry the rear wheel bearings. The live shafts extend through the sleeves to the outer ends of the hubs, driving from the outside as will be described later. All the road wheels run on two-point ball bearings, the balls being 11-16 and 1-2 inch in diameter. Wheels are of second growth hickory with 1 1-4-inch spokes; the rear wheels have fourteen spokes each and the front wheels twelve. Standard clincher rims are fitted for 4-inch tires, 32 inches in diameter.

The vertical four-cylinder engine has a bore and stroke of 3 7-8 inches and 4 1-2 inches respectively, and is rated at 20-horsepower. The cylinders are cast in pairs, with heads, waterjackets and valve chambers integral. Valves are symmetrically placed on opposite sides of the cylinders, the inlet valves being on the right and the exhaust valves on the left; the inlet valves are mechanically operated; bronze and fiber gearing is used to drive the cam-shafts.

An opening in the top of each valve chamber allows the removal of the valve when necessary, and the openings are closed by bronze plugs. The valve push rods are actuated by rocker arms inside the crank case, upon which the cam rollers are mounted. This relieves the push rods of side strain and insures long wear and easy operation. The inlet pipe from the carbureter to the inlet valves, consists of a single aluminum casting with four flanged openings for the valve chambers and a single similar opening on the outside for the gas supply pipe from the carbureter; the exhaust pipe and connections are arranged in a similar manner, on the opposite side of the motor.

The carbureter is of the float feed type and in it is incorporated a throttle of the piston type, which controls the auxiliary air inlet which is called into play when the engine reaches such a speed that the



STUDEBAKER 20-HORSEPOWER TOURING CAR WITH FOUR CYLINDER VERTICAL MOTOR AND SIDE ENTRANCE BODY.

regular air supply is insufficient. Warm air is taken from around the exhaust pipe, the shield placed on the pipe being visible in the engraving showing the exhaust side of the motor; the air pipe passes between the pairs of cylinders to the carbureter on the opposite side of the motor.

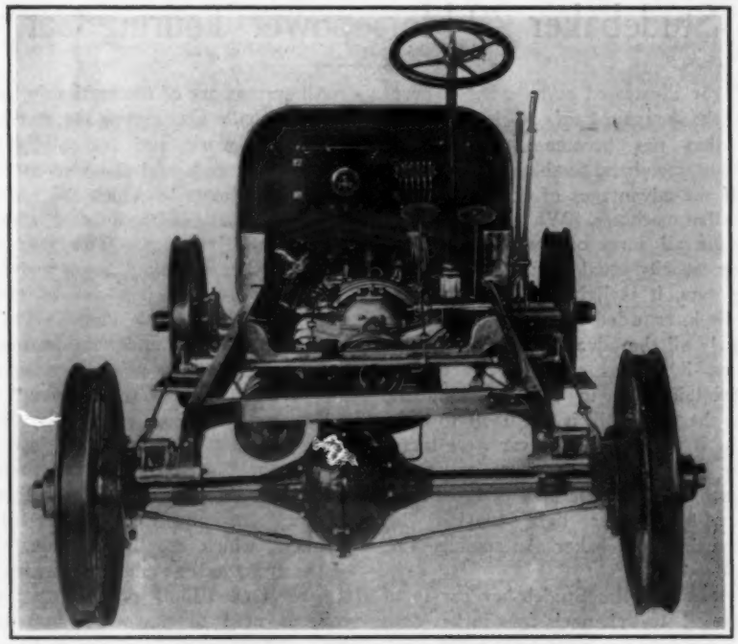
Gasoline is carried in a fourteen gallon tank under the front seat; a partition divides this tank into two parts, the gasoline in one section being held in reserve. When the main supply is exhausted and the motor, having no fuel, stops, the driver can draw upon the gasoline in reserve; but he has had warning that the supply is low, and yet has ample time to refill.

A cellular radiator cools the water which is forced through it by a centrifugal pump, the water entering the top of the radiator and leaving the bottom. The cooled water is fed into the cylinder jackets on the exhaust side of the top, and thus reaches the hottest part of the motor first. A short shaft driven by a pinion meshing with one of the two-to-one gears carries at one end the centrifugal pump and at the other end a flanged pulley for the fan belt. The fan is of aluminum, with six blades.

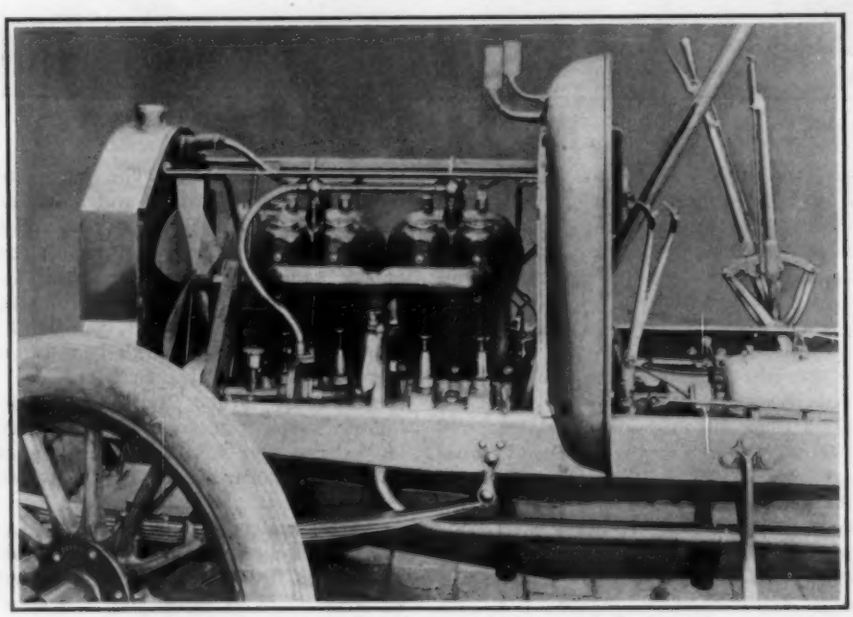
The spark plugs are placed in the centers of the cylinder heads, the wires being led to them through a large tube of hard rubber running above the cylinders. When running current is supplied by an Apple direct current generator rotated by friction from the flywheel; two storage batteries of two cells each are used for starting.

The four vibrator coils are placed on the dashboard. Current may be taken from either battery or from the generator direct, a three-point switch being provided. Usually, when starting, it is intended that the batteries should be used, and when the engine takes hold and picks up speed the generator is switched in and thereafter supplies all the current. The generator pulley is fitted with an automatic governor which prevents the attainment of a speed which would be likely to burn out the windings. The distributor is placed on the top of a vertical shaft at the rear of the motor on the inlet side, and is driven through bevel gearing by the inlet cam shaft; the timing of the ignition, as well as the throttling, are accomplished by the usual levers on the top of the steering wheel.

Close-grained gray iron is used for the pistons; each piston has four packing rings with flat laps; the rings are pinned to prevent turning so as to bring the joints in line and thus allow leakage. Rings are turned eccentric, compressed in clips and then ground accurately to cylinder size.



REAR VIEW OF STUDEBAKER 20 HORSEPOWER TOURING CAR CHASSIS.



FRONT END OF CHASSIS SHOWING EXHAUST SIDE OF MOTOR.

The wrist-pin is of hardened steel, ground to size, and forced into the holes in the piston; it is then keyed into place. The bearing in the wrist-pin end of the connecting rod is of hardened and ground steel. The big end bushings and the main bearings of the engine are of bronze. Connecting rods and the crank shaft are all steel forgings, with large bearing surfaces. Three bearings are provided for the crank shaft, one at each end and one in the center, between the pairs of cylinders. The aluminum crankcase is divided horizontally, the lower half being removable for inspection of the crankshaft and bearings.

A Hill Precision oiler forces oil under pressure to the bearings, the quantity of oil pumped varying with the speed of the motor and, therefore, with its requirements. From the lubricator the oil is carried to a sight feed gang on the dash, and thence to the bearings. The oil pumps work under sufficient pressure to force any ordinary obstruction through the pipes, thus helping to keep them clear. The oil reservoir is located under the hood near the radiator, and is thus always kept warm and the oil thin enough to run freely. The main bearings of the crankshaft are fed by the force feed, and the excess of oil from the main bearings is caught by rings on the crankshaft inside the case and thrown on the crank-pin bearings, holes being provided to catch this oil and carry it to the bearing surfaces. Splash is relied upon to lubricate the valve operating mechanism, the wrist-pins and the cylinders. Two oil pipes lead to the transmission gear shaft bearings, and the casing is of such depth that a considerable amount of oil may be carried in it, thus providing amply for the oiling of the gears and bearings. The bevel gear casing on the rear axle is made to hold oil

for the lubrication of the gears and bearings, and an oil feed to the bearing of the driving pinion keeps the supply replenished. The oil in the case also lubricates the differential gearing and the rear wheel bearings.

A large leather faced cone clutch, self contained with regard to spring thrust, is operated by a pedal, and interlocks with the emergency brake operating mechanism, so that the movement that sets the brake withdraws the clutch, and keeps it out of engagement until the brake is released. Between the clutch and the primary shaft of the transmission gear there is a universal joint and also a slip-joint to take up the end motion of the sliding member of the clutch.

A sliding gear transmission of the progressive type, compact in design, gives three speeds forward and one reverse, a single side lever controlling all speeds; the drive is direct on the high speed. Instead of being wide and shallow, as is the case with many transmission gear cases, the Studebaker gear case is deep and narrow, the primary and secondary shafts being in the same vertical plane. Fifty-point steel is used for the transmission shafts, the journals being hardened and ground; while the bearings are of machine steel, case-hardened and ground to an exact fit. Gears are oil-tempered, the steel from which they are cut being of extreme toughness. Gears are secured to their shafts by being bolted to solid flanges, the nuts all being castellated and cotter-pinned.

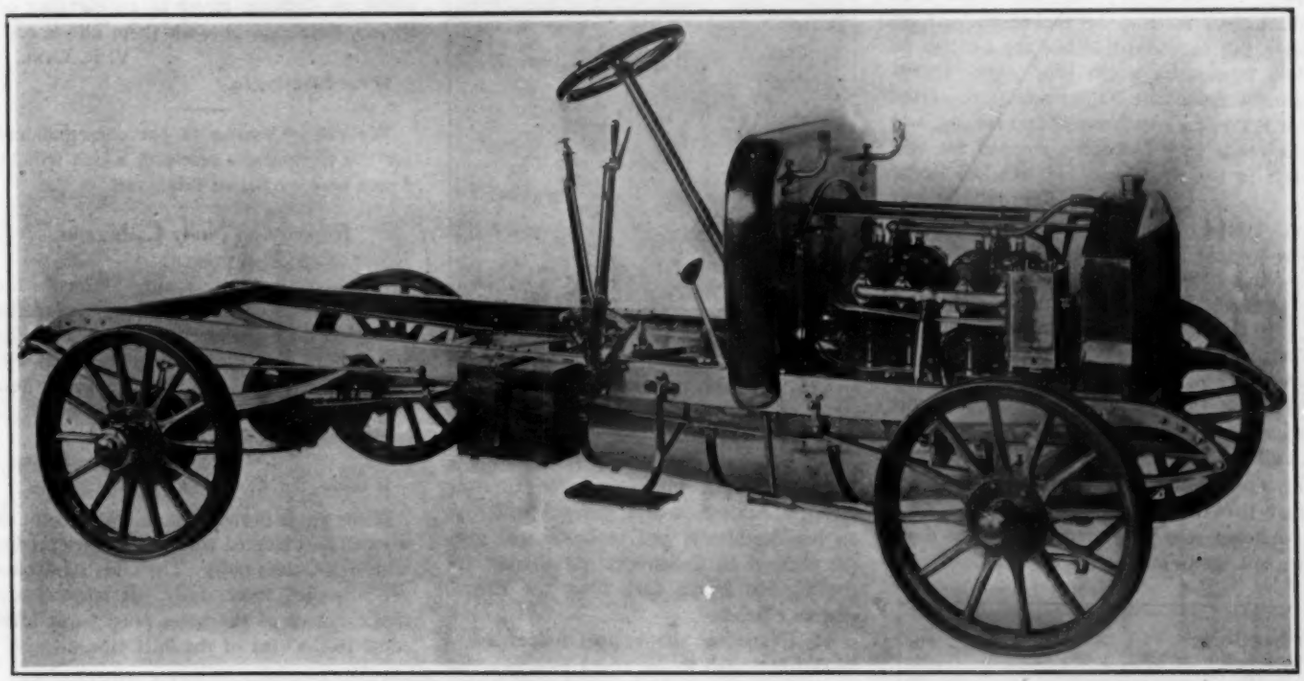
There is a universal joint just at the rear end of, and close to, the transmission gear casing; another joint is placed at the forward end of the bevel gear case, and between these two joints lies the propeller shaft. The bevel driving pinion runs on large adjustable ball bearings, lubricated, as already stated, by force feed. The large bevel gear is bolted to the differential casing, which, in turn, runs in ball bearings in the rear axle housing; in this housing there is also located a ball thrust bearing to take the thrust of the bevel gearing. The main driving shafts are squared at both ends, the inner ends fitting into square holes in the driving gears of the bevel gear differential and the outer ends taking the driving caps, which have squared holes for the shaft ends and castellated flanges which engage with corresponding castellations in the hubs of the rear wheels. An ornamental bronze cap screws over the end of the hub, keeping out dust and at the same time holding the parts in position. All the members of this driving system are of high carbon steel.

From the bevel driving gear casing on the rear axle a heavy tube extends to a point near the intermediate cross member of the frame. There it is held between two vertically-disposed helical springs. This arrangement prevents the rotation of the rear axle housing; and the springs at the end of the tubular rod cushion the strains and prevent the racking that would otherwise take place when power is suddenly applied or when there is a sudden increase in the resistance to the pull of the engine.

The hub or emergency brakes are of the internal expanding type, and are operated by a side lever, interlocking, as already stated, with the clutch-operating mechanism. The reguar service brake consists of a contracting split bronze ring working on a drum on the forward end of the propeller shaft. As the propeller shaft is subject to continual up and down motion, the brake blocks are mounted between helical springs, allowing sufficient play to avoid all straining of these parts.

An aluminum pan extends from the radiator to the rear end of the transmission gear case, protecting all the working parts in this space from mud, dust, flying stones and the like; the pan may be removed without difficulty if necessary. A pressed steel dash, of the dished type which is becoming so popular, is fitted, and carries the coil box, sight feeds and other devices. The steering gear is of the screw-and-nut type and, of course, irreversible; all joints are hardened and adjustable for wear.

Five passengers can be comfortably seated in the side-entrance body; the front seats are individual. In the rear is a compartment for carrying an extra tire; and two large lockers. The wheelbase of the car is 96 inches and the tread 54 inches.



THREE-QUARTERS SIDE VIEW OF CHASSIS OF STUDEBAKER 20-H. P. TOURING CAR, SHOWING INLET VALVE SIDE OF MOTOR.

Very few motor boats are in use on this part of the St. Lawrence river, writes Consul James H. Worman, from Three Rivers, Quebec. There is not a single craft owned in this town of 12,000 inhabitants, with more than 500 well-to-do people, of which one-half could well afford pleasure boats. American manufacturers of the latest improved models would do well to send a man into this section. He would doubtless carry off some very good contracts from Three Rivers, as well as from the wealthy towns adjoining. There is no use in sending circulars. Only the individual soliciting of a first-class salesman understanding the French language can make headway here.

Letter Box

A Little Trip in Europe.

Editor THE AUTOMOBILE:

[204.]—Though perhaps you would like an account of my automobile trip through Italy, France and England. Accompanied by my wife and two daughters, I left Boston Jan. 28 on the steamship *Romanic* with my 16-horsepower Knox car on board. We arrived at Naples Feb. 11, and had quite a time of it getting the automobile landed. There was no dock, and we had to put it on a lighter, and in getting it through the custom house, it seemed they charged duties by the number of springs the machine had on it. I told the customs official it had only two. It was a very dark night, and with the aid of matches he looked the car all over, but he could find but the two, so he said I must leave 230 lire. We toured around and about Naples and then started for Rome, the weather cold and raining, and the roads very bad. We stopped for two days in the mountains, and reached Rome in four days. The roads were muddy, and had been covered with broken rocks which cut my rear tires badly.

After staying in Rome for four days, we started for Florence, arriving in two days, just at the height of the carnival, and by the time we reached our hotel we were covered with confetti. Our American car aud party came in for quite a time of it; the streets being crowded with people dressed in all kinds of costumes. While in Florence I sent to Milan for two new tires, as my rear tires were done up.

After a stop in Florence for three days, we left for Genoa by the way of Lucca and

THE LEANING TOWER OF PISA.

Pisa. Here the roads were much better. Stopped one day at Genoa, and then rode down the Mediterranean coast to Ventinelia, a frontier town of Italy, where I got back my deposit of 230 lire.

When we reached the French custom house, I had to put up 700 francs deposit, and then we started for Mentone, with beautiful roads and fine views all along by the sea. There were many steep grades and sharp turns, so I had to run a lot of the way on low speed. As soon as we got into France the roads were fine.

Ran down to Nice and made headquarters there. I joined the Touring Club de France and its maps and books helped me greatly. Drove down to Monte Carlo, where great crowds were playing. My daughter being under age, I had to tell a few white lies, but got her in. Monte Carlo is a beautiful place.

Left Nice and ran through all the summering places on the sea, San Remo, Cannes

CHARACTERISTIC PROMONTORY ON THE FRENCH MEDITERRANEAN COAST.

and then to Aix, then up through the chateaux country to Lyons, then Orleans, the home of Joan de Arc, to Fontainebleau, and to Paris, where we stopped for nine days. Then we left for Boulougne (passing through Amiens, where Jules Verne was on his deathbed), and took steamer over the channel to Folkstone. At Boulogne I got my 700 francs back from the French custom officials.

At Folkstone the custom officer asked what I intended to do, and I told him that I was touring through England to Liverpool in my American car, and that I was going to take it back to Boston with me. That seemed to satisfy him, and he said there was no deposit required, and told me to proceed. From Folkstone we rode over a fine private road along the coast, toll one shilling. Stopped in London six days, then went to Liverpool and sailed for Boston on the steamship *Arabic*, with my car on board, having toured 2,000 miles.

Forgot to tell you about my air-cooled Knox. It created quite a lot of comment. They did not seem to understand how the cylinders could be kept cool without water. I guess I explained it to them about a thousand times. I would hold up my fingers and blow through them, my fingers representing the pins on the cylinder head. It would take me up those steep grades on slow speed and not heat at all; in fact, it could not run fast, as there were so many sharp turns.

B. F. SHATTUCK.

Boston, Mass.

Wishes the Transcontinentalists Luck.

Editor THE AUTOMOBILE:

[205.]—I have been very much interested in Mr. Megargel's articles from the front. They left here yesterday about 1:30 o'clock in the afternon, about four hours behind *Old Scout*. I send a photograph of the boys and *Old Steady*, taken just as they left here. Their delay was caused mostly by tire trouble. From what they said the roads were in an awful condition, and they and their car looked it by the mud on 'em, as the picture will show. They seem to be a very pleasant pair of autoists, and very good at handling their car. They expect to be in Omaha Sunday, and from the way they scooted out I guess they will make it in good time, for *Old Steady* seemed to be always ready, and responded quickly to the touch of her driver. On leaving here they went up Calhoun street at an eighteen or twenty-mile clip. I wish them all success.

V. R. LANE.

West Liberty, Ia.

We extend thanks to our correspondent for the photograph received, which will be found on page 644 of this issue.

Remedy for Noisy Carbureter.

Editor THE AUTOMOBILE:

[206.]—Will you kindly inform me through your journal of a remedy for the air intake of a carbureter making so much noise; can I fix my carbureter so that it will work quietly, or will I have to get a new carbureter? It seems to me there ought to be some way to muffle this noise.

A SUBSCRIBER.

Washington C. H., O.

If the air is drawn from a small metal or wooden box pierced with small holes the intake will be less noisy. The Olds runabouts use this plan successfully. It is necessary that the area of the holes must be at least equal to the area of the inlet pipe.

Not a New Model.

Editor THE AUTOMOBILE:

[207.]—We note in your issue of May 6, under the head "A Clever Catalogue Idea," the statement that our four-cylinder car is 20 horsepower. This is an error. The car is a 30 horsepower. This error will cause a lot of corespondence, as our customers who read it will be sure to think it is a new car which we are just bringing out, there having been rumors circulated to the effect that we were going to turn out a medium-priced high-powered car. We should be very glad to have you correct this in your next issue.

CADILLAC AUTOMOBILE CO.
Sales Department.

Detroit, Mich.

S. F. Edge has accepted Paul Meyan's challenge for a reliability tour of 5,000 kilometers to be ridden solely on French roads, and will start his Napier against M. Meyan's De Dietrich, if the Frenchman is agreed.

Patents

Steam Engine.

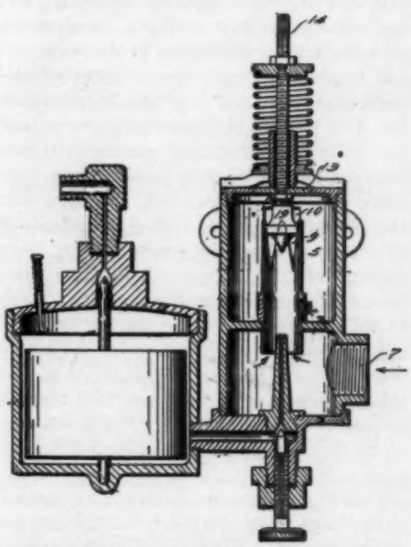
No. 788,723.—H. D. Langton, of Cleveland, Ohio.

A compound engine for superheated steam, having two high-pressure and two low-pressure cylinders, all single-acting. The valves are of the poppet type, located quite similarly to the valves of gas engines, and are operated by cams in much the same manner.

Carbureter.

No. 790,173.—F. A. Biehn, of Chicago.

This is an automatic float-feed carbureter in which the air enters at *7* and, drawing past the spray nozzle *24*, escapes through apertures *9* into chamber *5*, and finally passes out at *10*. The automatic feature is



BIEHN'S AUTOMATIC CARBURETER.

supplied by the air valve *13*, which is shown in its normally closed position, where it is held by the spring and stem *14*, to which it is attached. At high motor speed this valve is sucked downward, admitting pure air. The inverted conical plug *19* is likewise attached to *14* and moves with it, thus acting as a throttle to partly close the ports *9* against the carbureter air stream.

Gas Turbine.

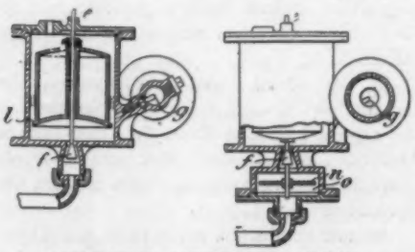
No. 789,554.—C. Lemal, of Alfort, France.

An expanding turbine nozzle, back of which is a combustion chamber, the first portion of which is funnel-shaped to provide increasing volume for the gases as they burn, while the second half is cylindrical and surrounded with a coil of tubing, through which water is passed to vaporize it. The steam thus formed is discharged into the burning or burnt gases, thus adding to the pressure while reducing the temperature of combustion.

Dead-Beat Carbureter Float.

No. 789,537.—Grouvelle and H. Arquembourg, of Paris, France.

The intention in this device is to compel the float to follow promtly the move-



DEAD-BEAT CARBURETER FLOAT.

ment of the carbureter up and down, under road vibration, instead of lagging by reason of its inertia and thus causing the float valve to open when it should be shut. This is accomplished by utilizing the principle of the dashpot in various ways, two of which are shown. In one a flange *l* is carried around the base of the float, which is nearly a fit in the float chamber, so that the liquid can pass it but slowly. The valve and spray nozzle are indicated respectively by *f* and *g*. In the second sketch the float stem is carried down into a chamber *o*, where it is attached to a disc *n*, which acts as a dasher.

Frame Construction.

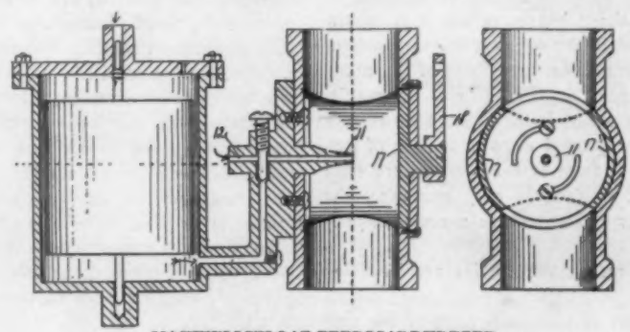
No. 788,605.—C. Schmidt, of Detroit, Michigan.

This patent covers numerous structural details in the frame design of the Packard motor car and the mode of supporting the motor, clutch, radiator, etc. It has nineteen claims.

Carbureter.

No. 789,749.—H. B. Maxwell, of Rome, N. Y.

This differs from other float-feed carbureters mainly in that the air stream is throttled simultaneously both above and below the spray nozzle *11*. The latter is horizontal as shown, and an annular throttle *17*,



MAXWELL FLOAT-FEED CARBURETER.

worked by the arm *18*, surrounds it. The effect of throttling below as well as above the jet is to increase the suction on the latter when the throttle is partly closed. The increase in suction thus produced takes the place of the higher velocity of the air stream when the throttle is fully open. The inlet *12* permits a small amount of air to enter with the gasoline, thus helping to spray the latter.

Controlling Means for Steam Vehicle.

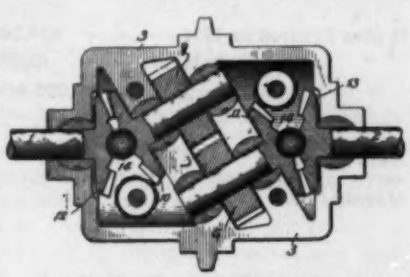
No. 788,641.—B. H. Green, of Los Angeles, California.

In this mechanism all the control devices are mounted on the steering column. The throttle valve has a conical seat and is located at the base of the steering column, where it is operated by simple rotation by means of a lever inside the steering wheel, but independent thereof. A bleeder outlet from this throttle valve admits steam to the cylinder of a steam brake device when the throttle is moved a little beyond the point of closure. Reversal is effected by a toothed segment moved by another lever in the steering wheel and meshing with a bevel pinion actuating the reverse gear through a rock shaft.

Differential Gearing.

No. 789,910.—C. C. Hill, of Chicago.

An ingenious modification of a compensating gear used in some early tricycles. It



HILL DIFFERENTIAL GEARING.

will be noted that if the casing *3* is held stationary and one shaft *1* is rotated, the other shaft *2* will be rotated in the opposite direction through the bevel gears *12 10*, spur pinions *8 9*, and bevel gears *11 13*. Therefore, power applied to *3* will tend to rotate *1* and *2* equally. The balls *14 14* help to preserve the axial positions of the shafts. The modification from the old tricycle gear consist in using the bevel gears instead of universal joints.

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Auto Racing at Morris Park. In the beautiful setting of the Morris Park race course in the upper end of New York City the first meeting on a track now devoted exclusively to the automobile was held last Saturday. In its scenic attractions, its provisions for the comfort and convenience of patrons, and its accessibility by road and rail, it is probably unexcelled the world over, and yet all these features are subsidiary to the real purpose of the track management—the promotion of contests between automobiles. That this is a much more difficult problem to solve to the satisfaction of the public than horse racing was again demonstrated in the opening meeting, when, despite the most earnest efforts of the management, a poor day's sport was the result. Many cars entered failed to start, and some of those that started were in a state of unpreparedness; most of the events were runaways, and, in fact, in only one race, the final free-for-all, was there a real competition.

In horse racing the entries are kept for one purpose only—to race—and when a race is started, the respective powers of the animals are not so far apart that a spectacular race with a driving finish is practically a certainty. In the case of the automobile, the entries are of a more haphazard character. Only a few of the machines are built and kept up specially for racing, and as the sales of a particular make of machine may be affected by the performance of the racing car, its chances of success are more seriously considered than would be the entry of a race horse by its owner. Failure of the latter to win would mean for the owner nothing more serious than a possible loss of bets—his commercial interests would not be affected.

In the actual track performances, the automobiles classified simply by weight can be expected to give about the same sort of unrelated performances that steam vessels classified by displacement might give on the measured mile.

As now conducted, track races are practically trials against time, with the interest of real competition left out.

In retaining the interest of the public in track racing, the Morris Park management would doubtless find it to its advantage to abandon the mile as the unit of distance, and to substitute the complete circuit of the track—about a mile and five-sixteenths. In this way the public would witness the start and finish of each race, or at least all those except the mile trials, which could be started on the back stretch, so as to avoid the bad turn opposite the club house when driving wide open. This would lead also to the abandonment of the highly empirical method of timing used on Saturday, the timers in the judges' stand starting their watches by the dropping of the starter's flag at the further side of the track. Records timed in such a way may be good "talking points," but have no scientific value whatever. In the flying mile, indeed, a record not automatically timed can never be above suspicion.

✷

Development in Motor Design. The existing type of gasoline motor, with all its faults on one hand and all its good features on the other, is only passing through a stage of development; it is impossible to believe that anything like finality has been achieved, or will be achieved, until the enormous heat losses through the cooling water and through the high-pressure exhaust are in some measure prevented; until something more simple than the present ignition systems is evolved; and until the mechanism employed to regulate the aspiration and expulsion of gases—in other words, the valve operating mechanism—is simplified to the last degree. The turbine driven by the expansion of an ignited mixture of air and gasoline vapor seems, at present, to be a practical impossibility, and it is reasonable to believe that for some time to come the gasoline motor will develop along the lines of the engines now in use.

No single motor or type of motor has a monopoly of all advantageous features, each possessing its own peculiarities. It may be, and often is the case, that in order to turn out a motor that will embody some particular feature of merit, the designer incorporates a number of undesirable devices—perhaps more than counterbalancing the benefit to be derived from the meritorious feature. The fact remains, however, that the merit is there, and only needs to be separated and brought to light to improve the motor. The gradual adoption of better methods and the exclusion of many of what are commonly called "necessary evils" will carry the present type a long way toward perfection.

There are now three apparently irreconcilable features of gasoline motor design that, if successfully combined and refined, would produce a motor having many advantages. These are air-cooling, the two-stroke cycle of operation, and ignition by primary current. A motor in which these features were combined would be free from complications, weight, break-downs, friction and mechanical losses, constructional expenses, noises and other disadvantages attendant upon the use of valve gearing, valves, shafts, cams, pumps, piping, tanks, and extremely delicate and expensive apparatus necessary with high-tension ignition systems. It is obvious that mechanical difficulties of the most serious importance must be overcome before a good motor of this type can be produced; but it is equally obvious that a motor with no valve troubles, no water circulation troubles and no high-tension current problems, would be almost ideal. It might seem that the production of high-powered motors of this type would be impracticable, owing to the difficulty of air-cooling large cylinders. The mechanical simplicity of the motor, however, would make the use of a greater number of cylinders less objectionable than in four-cycle construction, and this, together with the fact that there is a power impulse at every stroke, should more than outweigh any objection on that score.

There are already small two-cycle air-cooled motors in every-day use abroad, and an American manufacturer has announced his intention of placing on the market an air-cooled two-cycle motor, said to have been tried out successfully. If evolution proceeds along such lines as these, with the results that seem possible, the advent of the gasoline turbine may be awaited without impatience.

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French Makers Discuss Foreign Competition. Manufacturers will read with interest the report from our Paris correspondent, in the news pages, embodying the views of French builders about foreign, and especially American, competition. There is no reason that we know of why the results that have followed development here in other lines should not in time follow in the automobile industry. It is only a comparatively short time ago that steel rails, ship's plates, heavy machine tools, and textile machinery, for examples, were extensively imported into this country from abroad, while now the products of American shops in these lines of manufacture are

to be found all over the habitable globe. Domestic automobile builders are now too busy filling home orders to pay much serious attention to trade in Europe—though it would be well if they would pay present attention to meeting a share of the demand in neutral markets.

Mr. Stern's arguments, quoted by our correspondent, are ingenious but not convincing. A machine that will stand up on our Western roads is likely to more than fulfill requirements of a country in which good roads are the rule, and more especially in the case of the small car, whose speed on any sort of road is within the limit set, not by ordinance but by the power equipment. Nor has it been shown by past experience that cheap labor gives superior commercial advantages in turning out high-grade interchangeable work, to which the construction of the automobile so readily lends itself.

No matter where the supply may come from, there is a more well defined limit to the demand for the most expensive cars than there is to the smaller and less costly types, and in meeting the latter need the domestic builders are in advance of their foreign rivals to-day.

AUTO WEDDINGS POPULAR.

Shrewd Groom Avoids Demonstration and Parade Arranged by Friends.

There was a genuine automobile wedding recently by a couple of Philadelphians, who left their suburban home at Jenkintown, traveled all the way to Wilmington in the groom's Columbia touring car and returned home—the entire trip consuming but six hours. The members of the party, which included besides Harold B. Larzelere and his fiancée, Miss Annie B. Shively, three relatives of the groom, were attired in ordinary automobiling garb, and presented themselves before Archdeacon Hall at the rectory of St. John's Episcopal Church, Wilmington, covered with dust and very hungry. After the ceremony, which consumed but a few minutes, the party ate luncheon and sped Philadelphiaward.

Another wedding party, who did the thing up in the conventional frock coat and high hat style, and afterward started on the first lap of their honeymoon in an automobile, was that of Clinton Vanderbilt Meserole, of New York, and Miss Ida Lewis Brooke, of Germantown. They were married at the Second Presbyterian Church, Germantown, on Tuesday afternoon last, and had arranged to ride in the groom's Packard car from the bride's home to the Bellevue-Stratford. But the newly-made benedict got wind of the fact that a party of friends had made preparations to follow him to the hotel in a dozen or more automobiles, just to attract attention to them. The New Yorker was alert, however, and after a 'phoning bee with the Cadillac garage people he had a substitute car stationed round the corner. When the happy couple faded from sight the tormentors tumbled into their several machines and made haste after the Packard, which they followed to the hotel, only to discover that it contained no one but the chaffeur. To their chagrin they learned, upon inquiry, that their supposed quarry had arrived at the hotel ten minutes before and was safe from their attentions.

Dr. H. E. Thomas Makes a Statement.

Special Correspondence.

CHICAGO, May 20.—For a certainty the Thomas car will be a contestant in the coming Gordon Bennett race and Joseph Tracy will drive it.

In substance, spoken with a good deal of emphasis and feeling, these were the words of Dr. Harold E. Thomas, to THE AUTOMOBILE correspondent last evening as the doctor sat on a table in his study, dangling his legs before the dark grate into which was piled a great Mexican saddle, a vivid blanket and snaky quirt.

The doctor was a little nervous and he admitted it. He ran his long, slender fingers through his mane of black hair, occasionally slipping from the mahogany table and taking a little turn around the room. He thought some of the criticism of Eastern papers had been severe enough, considering that they knew nothing of the situation. He challenged the statement that he had ever spoken to Webb in his life, or had ever considered bringing his car from Bridgeport, Conn., to enter the races at the Harlem track near Chicago.

"There have been differences—it is idle for me to try to say there have not been," said the doctor, "but I will say only that every possible difference between me and the Locomobile people have been passed over until August, at least. Until then both sides should have only the race at heart. As to what the chances for winning the race are, I do not know. I may say that I have never seen or talked with Tracy, but I have confidence in the man so far as I have been able to judge his record. I think he means to win the race if he and the machine can do so. I know the course is an ugly one and I can agree with Tracy that it may be a 'race of tires.' The machine will go on June 1, and Tracy will have time to judge the speed limits at the curves.

"I can say that if the machine wins the Gordon Bennett cup, or even if it shall make a good showing in the race, it will start in the Vanderbilt event. Whether Tracy will drive it in the Vanderbilt race depends upon his showing on the other side If it is to be a slow car in the Gordon Bennett, I might as well drive it myself in the Vanderbilt event. At any rate when I am asked to name the driver for the Vanderbilt race I shall ask that I be named as driver, with the privilege of substituting another man in an emergency.

"For myself, I am getting ready to dodge irritations and troubles in a run down to One Hundred and One ranch in Oklahoma. I am one of the owners in the property and have the bunch of buffalo that are herded there. I like the ranch life and I am going to let up on this race worry for a little while at least."

Dr. Thomas has paid the last $6,000 on his $18,000 machine—a mechanism that he has never seen. He estimates that the run in the Gordon Bennett race will cost him another $7,000 before the machine is home again, victor or loser.

The greatest satisfaction is expressed in New York and in the East generally at the decision of Dr. Thomas to send his new racing car to France to compete for the Gordon Bennett cup. That Joseph Tracy is to drive, notwithstanding rumors to the contrary, is also considered a matter for congratulation, for Tracy's work is well known and his qualifications as a driver appreciated. The huge Locomobile has not, as yet, complied with the regulations, which call for a non-stop run of 250 miles and a total road mileage of 1,000 miles, but no doubt this will be done as soon as the car is finally sent out of the Locomobile factory at Bridgeport, Conn., where it is now undergoing adjustments.

The two Pope-Toledo cars entered for the Gordon Bennett race were also sent away without having complied with the conditions as to road performance. As will be recollected, these cars were shipped to France on May 9, Herbert H. Lyttle and his mechanic, William Knipper, and B. H. Dingley and his assistant, J. T. Tattersall, following four days later.

That the requisite tests will be made, however, is assured by the fact that Clarence Gray Dinsmore, the foreign representative of the A. C. A., has been appointed to superintend the trials, and as he is known to be strict in his interpretation of rules, there will be no doubt of the eligibility of the cars for the big race when they have passed his scrutiny.

SLOW DELIVERIES IN QUAKER CITY.

Special Correspondence.

PHILADELPHIA, May 22.—It is stated at several establishments along "Automobile Row" that owing to inability to secure cars from their respective factories quite a number of agents have been compelled to return deposits on cars ordered many weeks ago. It is an undeniable fact that there is a dearth of cars for delivery in some quarters here just now, and unless extra efforts are made by the makers to fill the standing orders at once the withdrawal of deposits will become general.

Puns are not usually to be encouraged; rather it is the duty of every self-respecting citizen to do his best to repress a giggle when someone makes a particularly bad one. But occasionally a pun is perpetrated that is so apt—American, pat—that it is utterly impossible to smother an appreciative smile. The Fisk Rubber Company, of Chicopee Falls, Mass., has just fallen into line with many other manufacturing concerns by issuing a house organ, and Vol. 1, No. 1, appeared in May, boldly named the *Pneus*. No editorial apologies are made for the frivolous title, and the opening page is followed by a series of bright articles on tires and kindred subjects—useful, instructive, humorous. The new house organ should be appreciated not only by users of Fisk tires, but by all those who are addicted to "pneus."

The Oldsmobiles that left New York for a run across the continent to Portland, Oregon, will be old mobiles by the time they get there.—*New York Commercial.*

DEAD HORSE HILL CLIMB PROMISING.

Event Promoted by Worcester Club Assuming Large Proportions — Many Entries of Well-Known Drivers and High-Powered Cars — Guests and Entrants to Be Banqueted.

Special Correspondence.

WORCESTER, MASS., May 20.—The committee of the Worcester A. C. is endeavoring to eclipse the annual Eagle Rock contest with the Dead Horse hill climb, which takes place on Thursday, May 25. While it is too early to predict that it has succeeded in this undertaking, there is no doubt in the minds of automobilists of this section that it will at least equal the Eagle Rock climb.

The entry list is already assuming large proportions, more than fifty entries having been received, many of which are from persons prominent in automobile racing. The contest committee has added still another event to the program, open to amateur drivers of Worcester county, the members of the A. C. of Marlboro being eligible to compete. A silver cup is offered as the prize for the winner in this class, and carries with it the county championship.

The Jamesville rifle range, adjacent to the course, has been secured, and this vast area of level land affords an ideal place for parking the spectators' cars. A grand stand and judges' and timers' stands have been erected at the finish line. The McMurtry timing apparatus will be used. The course has been put in good condition by the street departments of Worcester and Leicester, and some fast times have been made in trials of local cars.

One of the best features of the course is that there are no street railway lines on it, and the cars after having completed the climb will not have to return over the course, thus avoiding delays in running off the events. After passing the finish line the cars will continue to Main street, and return to the starting point by way of Main and Ludlow streets.

All arrangements for the contest have been completed. The medals to be awarded the winners will bear the seal of the city—"The Heart of the Commonwealth." The officials selected, a list of whom was published in THE AUTOMOBILE of May 18, have accepted their commissions, and Manager Asa Goddard has been advised that other clubs throughout the state are arranging runs to Worcester for this occasion.

The first of the events will be started at 1 o'clock in the afternoon, and after the close of the day's sport the local club will tender a banquet to the entrants and guests.

TROPHY FOR 1,000-MILE RECORD.

In addition to the program of races announced for the opening meet at the Empire City track, Yonkers, Tuesday, May 30, an effort is being made to secure an entry for a 1,000-mile race against time in an effort to lower the record for this distance recently established on the Brighton Beach track by C. G. Wridgway. The Empire City Club, under whose auspices the races will be conducted, has offered a cup for the 1,000-mile track record, and if an entry is secured, the first contest for the trophy will commence on Monday afternoon, and be scheduled so as to finish just before the first event of the Decoration Day races.

Under the provisions of the gift, all contests for the cup shall be held on the Empire City track, and when won three times by any one make of car, the cup becomes the property of such manufacturer. The first contestant will cover the distance alone, and if he succeeds in lowering the present record, he will be adjudged the winner and become the temporary holder of the trophy; and as such he will at all times be subject to challenge by any one, but will have the privilege of entering the contest at the same time in order to defend his title under like track and weather conditions.

The races scheduled for Tuesday afternoon will be started at 2 o'clock.

AUTO DAY AT COLORADO FAIR.

Special Correspondence.

PUEBLO, COL., May 18.—Auto Day will be a feature of the State Fair in this city during the week of Sept. 25.

It is planned to have an automobile parade in the morning, races in the afternoon and an illuminated parade in the evening. The fair management has interested owners in all parts of the state, and a large number of machines from out of the city will participate in the events.

In addition to the special events arranged, it is also planned to have a road race between Denver and Pueblo, and Colorado Springs and Pueblo, on the day preceding the big celebration.

MOTORCYCLISTS' FIRST AID.

With a view to helping motorcyclists to surmount the difficulties that will occur even with the best regulated motorcycles, the Federation of American Motorcyclists has issued the "F. A. M. Helping Hand Book," for the benefit of members of that organization. The pamphlet has 28 pages, containing a great many practical hints and suggestions for the care of motorcycles, the matter having been prepared by R. G. Betts and George H. Perry, both experienced motorcyclists. The commonest forms of trouble are described and the proper remedies given; and then a number of less common mishaps are described and the solutions of the problems appended. The little book is plain and practical from beginning to end. It is not for sale, and is intended only for the use of members of the F. A. M.

The Morris Park Motor Racing Club announces a twenty-four race to be held at the Morris Park track June 9-10.

CINCINNATI HILL CLIMB SUCCESSFUL.

First Event in Buckeye State Draws Many Spectators Despite Rainy Afternoon —Fast Times Made by Club Members Over Three-Quarter Mile Paddock Road Course.

Special Correspondence.

CINCINNATI, May 20.—The first hill-climbing contest ever held in Ohio took place Wednesday, May 17, under the auspices of the Automobile Club of Cincinnati, over a course on the Paddock Road, a short distance north of the city. The length of the course was 3,975 feet, or 15 feet less than three-quarters of a mile, and the average grade was about 25 per cent.

The best time made was 1:00 3-5, by Andrew Hickenlooper's 30-horsepower Pope, Toledo with tonneau, carrying four passengers. A similarly equipped Pope-Toledo carrying the same number of passengers, and entered by Col. Max C. Fleischmann, finished second in 1:05 4-5.

The races had been postponed from the day before on account of the heavy rain, and it was raining during the afternoon that they were to run, nevertheless there was much interest in the contests, and spectators lined the hillsides bordering the road for the full length of the course, and were in crowds at the finishing and starting points.

MAKING A TURN WITH NATIONAL CAR IN CINCINNATI HILL-CLIMBING CONTEST.

The arrangements for the event were made by Val. Duttenhofer, Jr., president of the club, and were perfect in every detail. The course had been put in splendid condition by the county commissioners especially for this event, under the directions of the officers of the local club. Col. Paul M. Millikin, chief of police of Cincinnati, with Lieut. Casey and a squad of mounted police, guarded the course and kept it free from spectators during the races. Hon. Julius Fleischmann, Mayor of the city, presided as referee at the finish line, while George Hawley and Harry Crane, two enthusiastic local automobilists, were in charge at the starting line. Special telephone lines connected the starting and finishing points.

This was strictly a club event, with entries limited to the members of the Automobile Club of Cincinnati, who competed with each other in the several classes for twenty silver cups offered by the club, and it was only a

forerunner of the larger contests which will be given by the club in the near future.

The summaries follow:

Class I. (Runabouts, 11 H. P. and less.)

Car.	H.P.	Owner.	Time.
Franklin	10	A. W. Granger	1:51 2-5
Knox	8	H. R. Smith	2:54 4-5
Autocar	8	W. S. Crain	3:03 1-5
Orient	4	Dr. H. C. Wendel	3:32

Class II. (Touring cars, 12 to 20 H. P., two passengers, tonneau attached).

Reo	16	Sidney Black	1:46
Logan	18	Frank Miller	1:51 2-5
Ford	12	William Stern	1:52 4-5
White steamer	15	Robert Mitchell	1:54 2-5
Jackson	18	H. E. Hudson	1:57
Franklin	12	A. B. Morgan	2:05 1-2
Orient	18	Dr. H. E. Wendel	2:15 2-5
Knox	14	Dr. H. C. Wendall	2:33 1-5
Rambler	16	J. H. Ratcliff	2:38 1-5
Columbia	14	Dr. E. W. Mitchell	3:36 2-5

Class III. (Touring cars carrying four passengers).

White steamer	15	Robert Mitchell	1:32 3-5
Reo	16	Sidney Black	1:48 2-5
National	24	Stanley Hooker	1:54 3-5
National	24	Trimble McCullough	2:02 4-5
Winton	24	Val. Duttenhofer, Jr.	2:06 3-5
Pope-Toledo	24	H. F. Shaefer	2:12 3-5
National	24	Dr. A. B. Heyl	2:20 3-5
Winton	24	John A. Payne	2:50 1-5
Orient	18	Dr. H. C. Wendel	2:51
Knox	14	Dr. H. C. Wendel	2:59

Class IV. (Free-for-all, tonneau attached).

Pope-Toledo	30	Andrew Hickenlooper	1:00 3-5
Pope-Toledo	30	Max C. Fleischmann	1:05 4-5
Reo	16	Sidney Black	1:48 2-5
National	24	Stanley Hooker	1:50 2-5
Winton	24	Val. Duttenhofer	1:53 4-5
Orient	18	Dr. H. C. Wendel	2:26 2-5

AWAKENING OF WILMINGTON.

Motorcycles for Policemen—Asphalt Street Paving and Driveway Planned.

Special Correspondence.

WILMINGTON, DEL., May 22.—The Board of Police Commissioners is considering the advisability of purchasing one or more motorcycles for the use of policemen detailed to duty in the automobiling districts, to prevent violation of the speed regulation. Bicycles are now in use for this purpose.

A few days ago the members of the Board of Street and Sewer Directors made a tour of the city in automobiles—the first time some of them had ridden in horseless vehicles, and they were pleased with the experience. The object of the trip was to ascertain where street paving and other improvements are most needed. The board contemplates paving several additional streets this year. There are now about 30 miles of paved streets here, and up to the present time the city has never used asphalt for paving, but the present board contemplates adopting it, in part at least, for some of this year's work, and in order to obtain information on the subject the members of the board made an inspection trip to some Pennsylvania cities last week, and will probably go to Boston for the same purpose this week.

Automobiles will likely be a feature of the Memorial Day parade this year for the first time. The idea has been suggested and favorable action is expected.

The Board of Park Commissioners is having a new three-mile drive built in North Brandywine Park, along the north bank of the historic Brandywine, for the use of automobiles and carriages. There is now a similar drive in South Brandywine Park, on the opposite side of the stream. After the new driveway is completed, an effort may be made to establish a toll automobile service in the park; that is, a line to carry pleasure seekers for a nominal fee.

The man in the auto has a right to "blow his own horn."—*Earlington (Ky.) Bee.*

HARTFORD RACE MEET.

Two-Day Program Arranged for Charter Oak Park, June 16-17.

Special Correspondence.

HARTFORD, CONN., May 20.—The Automobile Club of Hartford has secured the dates of June 16 and 17 for its race meet at Charter Oak Park. C. H. Gillette, formerly secretary of the American Automobile Association, will be the manager.

The special event of the meet will be a novelty in auto racing—a free-for-all twenty-hour race, which will start at 5:45 P. M. on June 16 and finish at 1:45 P. M. on June 17. The course will be well lighted during the night and operators may be changed as often as desired. The positions at the finish will be determined by mileage.

Entries for the races will close June 14. The first prize in each event will be a silver trophy valued at $75, and the second prizes will be silver medals of the value of $30. The entrance fee for each event is $5. The races will be run under the racing rules of the A. A. A.

The list of events follows:

FRIDAY, JUNE 16.

Corinthian Mile, all classes—Cars to be driven by amateur owners.

Three Miles, club handicap—Open only to members of the Automobile Club of Hartford. To be run in four heats and a final. First heat for cars of 10 horsepower or less; second heat for cars of 11 to 20 horsepower; third heat for cars of 21 to 30 horsepower; fourth heat for cars of more than 30 horsepower. The winners of each heat will be handicapped in the final. No handicaps in first four heats.

One mile, free-for-all.

Three miles, for stock touring cars, equipped with tonneau and otherwise as per catalogue specifications. Each car must carry three adult passengers in addition to driver. Cars will line up at the tape with dead engines, which must be started by the driver at the signal from the starter. At the end of the first mile, cars must stop at the tape and unload passengers. At the end of second mile, cars must stop at the tape and take passengers aboard.

Five miles, for cars weighing from 881 to 1,432 pounds.

Five miles, for stock cars listing at a selling price of more than $3,000.

Twenty-hour, free-for-all. The start will be made at 5:45 P. M. Friday, June 16, the cars to run continuously until 1:45 P. M. Saturday, June 17. Course to be lighted during the night, and operators may be changed as often as desired. Positions at finish to be determined by mileage.

SATURDAY, JUNE 17.

One mile, for stock runabouts listing at $1,000 or less.

Five miles, for cars weighing from 1,432 to 2,204 pounds.

One mile, for stock cars listing at $1,001 to $2,000.

Five miles, free-for-all. Cars having a track record of better than one mile in sixty seconds barred.

One mile, for stock cars listing at $2,001 to $3,000.

Five miles, Charter Oak Handicap, free-for-all.

DENVER'S 1,000-MILE RACE.

Colorado Enthusiast to Attack Record at Overland Park, May 30.

Special Correspondence.

DENVER, COL., May 19.—A thousand-mile race for the world's record and a side bet of $500 is being arranged for the Decoration Day automobile races at Overland Park. This test of endurance and skill will be undertaken by E. Linn Mathewson and E. R. Cumbe, of Denver, who will endeavor to lower the record recently made by Charles Wridgway in New York, when he drove a Peerless car 1,000 miles in 25 hours, 50 minutes and 1 second.

Mathewson figured out the possibilities of the Overland track, and offered to wager $500 that he could beat this record in a two-cylinder Queen car. E. W. Swanbrough, local agent for the Ford cars, accepted the wager, and further offered to bet $200 that Mathewson could not cover 1,000 miles in 30 hours.

The race will be timed so that the finish will be the first event on the card for Deco-

E. LINN MATHEWSON IN QUEEN CAR ENTERED IN DENVER 1000-MILE RACE.

ration Day. The contestants will necessarily have to start the day before, race all day and night, and into the next day, until the 1,000 miles are covered.

In order to stimulate interest in the event G. A. Wahlgreen has offered a $500 cup for the winner.

EDUCATING LEGISLATORS.

Hartford Factory Gives Demonstration Outing to Connecticut Lawmakers.

Special Correspondence.

HARTFORD CONN., May 20.—The members of the committee on public health and safety of the Connecticut Legislature, which has charge of the bills on automobile legislegislation before that body, have been given an outing by the Electric Vehicle Company. Among the guests were several members of the Farmers' Alliance, who have actively worked for the passage of stringent speed laws.

Five big cars, with Eddie Cannon Bald as operator-in-chief, rolled up to the State Capitol and took the party on board. Special permission had been obtained for running the cars for one day only at any desired speed over the roads of the towns of West Hartford and Newington. The purpose of the trip was to afford the lawmakers practical object lessons covering the control of automobiles under all conditions of use on the highways. M. Toscan Bennett, the Hartford lawyer who represents the National Association of Automobile Manufacturers, had general charge of the arrangements, and Bald's assistants at the wheels were experienced operators.

Previous to setting out for the country the party was driven through some of the principal streets of Hartford, and a good exhibition was made of the way in which machines can be safely manipulated among the thick traffic of city streets.

The cars were speeded on the fine roads of West Hartford and Newington, and as high as 50 miles an hour was frequently made when safe opportunities presented. Speed indicators on the leading cars kept the legislators informed as to how fast they were traveling at all times, and there was much astonishment expressed at the apparent slowness of the present Connecticut legal rate of 15 miles per hour.

At Elmwood a stop was made and some interesting tests were conducted, demonstrating the quickness with which a car can be brought from top speed to a full stop, the ease of turning around on narrow roads, quick turnouts around obstructions, backing up hill, stopping on a steep down grade, and the like.

The trip was a successful one from every point of view. All the members of the party, many of whom had previously been inclined to lower rather than raise the limit, seemed agreed that a greater speed than the present one of 15 miles per hour could be safely allowed. The plan adopted was a thoroughly practical one of bringing the right influences to bear upon the matter of legislation.

To the large and rapidly growing list of things whose virtue consists in being minus something—such as chainless automobiles, punctureless tires and waterless motors—must now be added the windless horn, electrically hooted. The inventor ought to be compelled to invent a word to describe the working of the device, which cannot conscientiously be referred to as "blowing."

The police department of Springfield, Mass., has put into service an automobile patrol wagon.

REGISTRATION LAW VALID.

So Held in Opinion of Supreme Court of Massachusetts.

Special Correspondence.

BOSTON, May 17.—By a decision of the full bench of the Supreme Court handed down to-day the Massachusetts automobile registration law is adjudged constitutional. This is the first time the Supreme Court has had this statute brought to its attention, and its decision will have an important effect, not only upon automobile cases in this State, but also upon cases in other States where laws have been enacted based upon the Massachusetts statute. The decision rendered was on the case of F. Shirley Boyd of Cambridge, who was charged by the police with violating the law in driving his automobile on Boylston street, Boston, "without having then and there plainly displayed thereon in Arabic numerals not less than four inches long the registered number and mark of said automobile."

The case came up in the Municipal Court, was appealed to the Superior Court and taken to the full bench on exceptions. Mr. Boyd's exceptions were that the registration law was unconstitutional, illegal and void because it was class legislation, because it imposed an extra burden upon automobilists in their right to use the public highways, because the license fee constituted a double tax, the owner of the automobile already having paid a tax upon the machine as personal property to the city of Cambridge, and because the license granted no additional privileges, automobilists already having a right to the free use of the highways. Mr. Shirley's automobile was duly registered and he held a license to operate. It was claimed in the original complaint that he had covered his number plates with vaseline so that the number would be obscured by dust and mud.

The Court's decision, written by Judge Loring, is as follows:

"There can be no question of the right of the Legislature in the exercise of the police power to regulate the driving of automobiles and motorcycles in the public ways of the Commonwealth. They are capable of being driven, and are apt to be driven, at such a high rate of speed, and when not properly driven are so dangerous as to make some regulation necessary for the safety of other persons on the public ways.

"Nothing in the act has been called to our attention which is not a proper exercise of this power. This act being passed by the General Court, it is not necessary to consider whether a somewhat similar act can be passed by a city.

"The registration fee of $2 required to be paid is plainly a license fee and not a tax, as the fees were held to be which were imposed by city ordinance in question in Chicago."

LIBERAL CONNECTICUT LAW.

Legislative Committee Drafts Substitute Measure Raising Speed Limits.

Special Correspondence.

HARTFORD, May 22.—The finishing touches on a more liberal automobile law are being given by the committee of the legislature on public health and safety. It will be a substitute bill, embodying features contained in some of those referred to the committee early in the session, as well as some points not touched upon by any of those. Its details have not been worked out yet, and it may not be in shape for report to the legislature until next week.

Unless there is a change between now and then, the bill will increase the speed limit from fifteen miles an hour in the country and twelve in the cities to twenty and fifteen respectively. The recent trip of the committee and other influential legislators in autos caused them to believe that such increase could be made with entire regard for the rights of others. The provision that, whatever the limit, the speed must not, within those limits, be such as to be dangerous to life and property, remains in the bill.

The proposition for annual registration has not found favor with the committee as a whole, and that will not be required, but the displaying of numbers both front and rear, instead of as now on the rear only, will be required. More than that, all autos will have to be numbered, manufacturers' test cars and such included.

Rules of the road, applying to all vehicles, will be set forth in the bill, and this, it is believed, will be of great benefit to all concerned. As to penalties, the committee is still undecided. As the bill stands, it is understood there is no change from the old law, but a jail penalty is under consideration.

NEW WISCONSIN BILL.

Senator Rogers to Introduce Measure Without Registration Feature.

Special Correspondence.

MILWAUKEE, May 20.—Automobile legislation which has been pending before the Wisconsin legislature this session has presented numerous phases. In the first place, the Milwaukee Automobile Club appointed a committee to attend the preliminary hearing on the automobile bill, with instructions to oppose everything in the way of a licensing and numbering provision.

Shortly after the members of the committee had discussed the matter fully with the legislators, and particularly heard representatives of the rural districts, they realized that a licensing and numbering clause was inevitable in order that concessions favorable to autoists might be expected in return. Consequently, a compromise was effected; the automobilists were requested to withdraw their fight on the license feature, and the belligerent legislators were asked to acquiesce in the passage of a bill which would be state-wide in its operation and provide for liberal speed regulations.

The Attorney-General gave his opinion that the bill was unconstitutional because of its license requirement.

This objection by the Attorney-General was met by the substitution of the word "registration" for that of "license," the registration fee to be merely $1, which would barely cover the cost of the metallic numerals. In this form the bill was passed by the lower house, but when it reached the Senate it was referred to the judiciary committee through the efforts of Senator C. C. Rogers, who pointed out that the correction in the bill was a distinction without a difference. Mr. Rogers stated further that the real objection to the bill, in his opinion, and the one that made it unconstitutional, was that it compels the automboilists to wear a police tag, under penalty, that is not required of any other users of the highway.

Next Monday Senator Rogers will offer a substitute bill to the judiciary committee for the Stondall bill which will be practically the same except that the registration fee is to be eliminated.

CALIFORNIA SEASON OPENS.

San 'Francisco Club Makes Run to San Jose and Return.

Special Correspondence.

SAN FRANCISCO, May 13.—The automobile season for this section of California was opened on Saturday and Sunday, when the Automobile Club of California held an inauguration run to San Jose and return. More than 100 cars took part in the run, which was so arranged as to permit cars to take any route and depart at any time desired. The rendezvous was at the Vendome Hotel, where a hop was held on Saturday night. The bowling alley, baths and grounds of the hotel were given over entirely to the automobilists. On Sunday short runs were taken to nearby resorts, and the greater number of autoists returned late Sunday afternoon.

The San Francisco club does not believe in a close order run, on the ground that a large number of cars raise so much dust as to interfere seriously with the comfort of the participants. On this account all of the runs of the club are rendezvous affairs, leaving the route and time of starting to the choice of the members. Several runs will be held this season, and a number of them will be planned as object lessons for members of the several boards of supervisors, who will be invited to attend.

The A. C. of California has succeeded in securing a concession from the Southern Pacific Railroad, permitting automobiles on all ferry boats under fairly liberal conditions. Heretofore cars have only been permitted to travel on what is known as the Creek route, except under practically prohibitive conditions. The Creek route boats run on a two-hour schedule, and no later than 8 o'clock at night.

As the roads out of San Francisco on this side of the bay are not in safe condition, and the best touring roads start on the Alameda side, the local automobilists have been severely handicapped. The new order, which went into effect on May 10, permits cars on all broad-gauge boats, giving them the advantage of a half hourly schedule, with boats running as late as midnight. The new conditions merely give vehicles drawn by horses precedence in location on the boats, although steam cars are not allowed to have fires lighted while crossing the bay. The effect of the new regulation has already been felt, and the number of cars crossing to the Alameda side is far greater than ever before.

This concession has been granted as an experiment, the railroad officials threatening to bar cars from all boats in case the regulations are not observed. The local club is assuming the responsibility for the observance of the regulations, and has sent out circulars warning all members of the situation.

The club has also secured permission for automobiles to use all drives in Golden Gate Park under an eight-mile speed limit for a period of sixty days. The Park Commissioners consented to a trial for that length of time, and if there is no serious complaint will extend the concession indefinitely.

There is a belief on the part of the officers of the club that the new state law permits the use of all park roads without the consent of the commissioners, but it has been thought best to avoid friction if possible.

PHILADELPHIA CLUB MOVES.

New Home in Manufacturers' Club Building Affords Many Conveniences.

Special Correspondence.

PHILADELPHIA, May 22.—During this week the Automobile Club of Philadelphia will remove to its new quarters in the building of the Manufacturers' Club, at 1,409 Walnut street. The board of governors decided to accept the offer of the Manufacturers' Club at a special meeting held last Tuesday. The committee on location, which was appointed at the annual meeting of the A. C. of P. two months ago, after thoroughly studying the advantages of all the properties offered, unanimously decided to submit a favorable report on the offer of the manufacturers.

The new quarters will be entirely adequate for the purposes of the club until such time as it shall be decided to rent or build a house having garage facilities. In its new quarters the club will be able to entertain large crowds at banquets, smokers and the like, and besides, will enjoy many of the conveniences which go with membership in the Manufacturers' Club, of which organization not a few A. C. of P. men are members. A billiard rom will be installed at once and arrangements made whereby the Manufacturers' grill-room and bar privileges will be extended to the A. C. of P. members.

At the first meeting held in the new house a plan of doubling the membership, which has been under consideration by the board of governors for some time, will be outlined. President Starr is of the opinion that the conveniences which the club now offers its members will act as a magnet in attracting many of the 1,700 or more unattached automobilists in this city who are eligible to membership.

Assistant Secretary Gundflinger will occupy an office in the new quarters, and will be on hand at all hours of the day to give information to members.

STEAM CAR CONTINGENT IN CLUB RUN FROM SAN FRANCISCO TO SAN JOSE.

MINNEAPOLIS CLUB MEETING.

Officers Elected—Plans for Entertainment of Chicago-St. Paul Tourists.

Special Correspondence.

MINNEAPOLIS, May 19.—The Minneapolis Automobile Club held its annual meeting on Tuesday evening, and the following officers were elected: President, Col. Frank M. Joyce; vice-president, Asa Paine; secretary, R. G. Smith; treasurer, A. E. Paegel; trustees: E. J. Phelps, Dr. C. E. Dutton, Harry Pence, Horace Lowry and C. F. Haglin.

Just before the meeting the entertainment committee considered plans for Minneapolis Day during Automobile Carnival Week, Monday, July 10, and decided to raise $5,000 for the entertainment of the visiting clubs. As far as possible, this sum will be raised among members, before an appeal is made to other business men. There will be a parade and other features, after which the visitors will be entertained by Horace Lowry at Tonka Bay, Lake Minnetonka.

The club has also volunteered its services in entertaining the student singers from Christiania University. The singers will be taken about town in cars Monday, May 29.

STAG RUN OF SYRACUSE CLUB.

Special Correspondence.

SYRACUSE, N. Y., May 19.—The Automobile Club of Syracuse held its first club run of the season yesterday, going to South Bay, twelve miles from the city, over the Cicero plank road, and enjoyed a dinner at the noted Oneida Lake resort.

The run was a "stag" event, and the many members who participated took advantage of the opportunity to talk over the plans for the season, which bids fair to be the most successful in the club's history.

Women are to be taken on subsequent runs, which will be held about twice a month during the summer. A committee is working on the schedule, which will soon be announced by President Willett L. Brown.

NEWS NOTES OF THE CLUBS.

BUFFALO.—Members of the A. C. of Buffalo are justly proud of its membership record. Instead of ranking third largest in the country in point of membership, it really occupies second place. The Chicago A. C. has been outstripped, which, according to latest reports, has a total of 488 members, while the Buffalo club has more than 500, and thus is second only to the A. C. of America, New York City.

LA CROSSE, WIS.—Considerable interest is being manifested in the formation of the La Crosse Automobile Club. The leaders of the movement are very enthusiastic, and

are receiving the hearty support of local automobilists, every one of whom it is expected will become members of the club. The Chicago club will pass through this city early in July en route to St. Paul, at which time the first parade of the club will be held, after which the visiting tourists will be entertained in some manner yet to be decided.

TERRE HAUTE, IND.—At its recent meeting, the A. C. of Terre Haute elected the following officers: John S. Cox, president; Camille Urban, vice-president; Deming Wheeler, treasurer, and Isaac Torner, secretary.

BUFFALO.—The Buffalo Motorcycle Club held its annual meeting on May 15, and elected the following officers: C. E. Beecher, president; Dr. B. D. Brady, vice-president; E. G. Zimmerman, secretary-treasurer; W. E. Chadeayne, captain, and Dr. C. E. Cummings, engineer. The meeting was largely attended, and an interesting program of summer runs was arranged.

PORTLAND ORE.—The Automobile Club of Portland has been formed, and the following board of directors selected, pending the election of permanent officers: Sol Blumauer, Dr. C. B. Brown, R. D. Inman, W. F. Lipman, A. K. Bentley, D. C. O'Reilly and D. T. Honeymoon. It was decided that no one interested in the sale of automobiles shall hold office in the club, though they are eligible to membership.

MILWAUKEE.—At a meeting of the A. C. of Milwaukee, held last Thursday, an extended discussion was held on the subject of legislation now pending at Madison. The bills before the legislature were very clearly explained by James T. Drought, chairman of the legislative committee, after which the committee was commended for the work done in the matter. The club members are very enthusiastic over the prospects for its race meet on June 2-3, in which a number of prominent drivers will compete.

PITTSBURG.—The newly elected president of the A. C. of Pittsburg has announced the appointment of the following committees for the ensuing year: House committee—E. J. Kent, chairman; W. W. Darlington and W. J. Lewis; membership—W. J. Lewis, chairman; Thomas B. Huntley and Paul C. Wolff; racing—W. W. Darlington, chairman; E. J. Kent, W. J. Kent, W. L. Dixon and Edward Kneeland; laws and ordinances—James Francis Burke, E. J. Kent and Peter Hermes; auditing—A. R. Neeb, chairman; C. M. Miller and C. H. Dickinson. R. F. Van Vleck has been appointed assistant secretary, with headquarters at the club house, and will have charge of the affairs of the club house, under the direction of Secretary Smith.

JAMAICA, L. I.—At a recent meeting of resident automobilists, the Jamaica Automobile Club was formed, and the following officers elected: William T. Hale, president; P. G. James, vice-president; C. B. Crossman, secretary, and W. H. Furman, treasurer. The object of the club is the promotion of social intercourse and acquaintance among all owners of automobiles and others interested in same, the securing of legal rights and furthering the cause of good roads. A garage will be maintained, in charge of a competent repairman. The charter membership of the club numbers twenty-five persons, and the new organization starts life with every promise of success.

A company has been formed at Rijswijk, Holland, and will operate an automobile passenger service between that city and The Hague.

NEW ORDINANCE FOR MINNEAPOLIS.

Special Correspondence.

MINNEAPOLIS, May 19.—Alderman Westphal has prepared an automobile ordinance, which, while it is being considerably discussed in automobile circles, will have the support of the Minneapolis Automobile Club. The state law fixes the maximum speed at twenty-five miles, but this is believed to be too great, and the new ordidance will reduce it to twenty miles an hour.

The license numbers must also be exposed in triplicate, instead of only on the rear of the machine. The two additional are to be on the headlights so that they may be visible at night. The rear number must also be more firmly fixed than has been the practice.

Quite a radical feature is the prohibition of the use of glass shields, and even members of the club take exception to this. The alderman claims they are dangerous, and that they have a tendency to frighten horses. Asa Paine, a prominent member of the club, argues that in case this feature is permitted to go through it should also call for the removal of glass fronts from coupes and other vehicles.

The club members favor the eight mile limit in the thickly settled portions of the city, but do not believe it is practicable to enforce the proposed three-mile speed at crossings. The club, however, believes that there has been too much scorching and desires vigorous action in the matter.

TAGS NOT TRANSFERABLE.

Special Correspondence.

ST. PAUL, May 20.—Attorney General E. T. Young, of St. Paul, has decided an interesting question that has caused some trouble among the Minnesota automobilists. He holds that although an automobile has many elements of life, it is not an individual, and that when a machine is sold the license does not go with it.

This means that automobile licenses are not transferable in Minnesota. Under the law, as interpreted by Mr. Young, a person must have a separate license for each machine, and it is unlawful to change the numbers from one machine to another, when a person owns more than one car.

TO AMEND CANADIAN LAW.

Special Correspondence.

TORONTO, CAN., May 20.—A bill amending the existing law governing the operation of motor vehicles on the public highways is now before the Ontario legislature.

The amendment provides that the operator of a motor vehicle on meeting frightened horses, " . . . shall stop his car at a distance not less than 100 feet from the driver or rider of such horse or horses, and shall not proceed further towards such driver or rider unless or until signaled or directed so to do by such driver or rider, and shall if so requested by such driver or rider turn the motor vehicle from the traveled portion of the said highway when the same can be safely done, and when requested by such driver shall assist him in every way in his power to get the said horse or horses safely past the said motor vehicle, and when the approach by the said operator is from the rear of such driver or rider he shall not approach to within a nearer distance than 100 feet, until signaled so to do and shall not attempt to pass until such rider or driver shall have reached a place of safety or shall have signaled such operator to pass."

The bill further provides that in case of accident the burden of proving negligence or want of proper care on the part of the person injured shall be placed on the operator of the motor vehicle.

TO JAIL JERSEY LAWBREAKERS.

Special Correspondence.

PHILADELPHIA, May 22.—The many Philadelphia automobilists who yesterday traveled through Camden county, bound for Atlantic City, found that portion of the road within the county limits patrolled by constables. As ample warning had been given, however, there were no arrests.

District Attorney Lloyd has announced that the policy of giving warning, which was in vogue last year, has been abandoned, and that the constables have been given positive orders to arrest any automobilist who breaks the speed ordinance. Fines ranging from $10 to $50 will be imposed for a first offense, while a second infraction will be punished by a ten days' stay in the county jail.

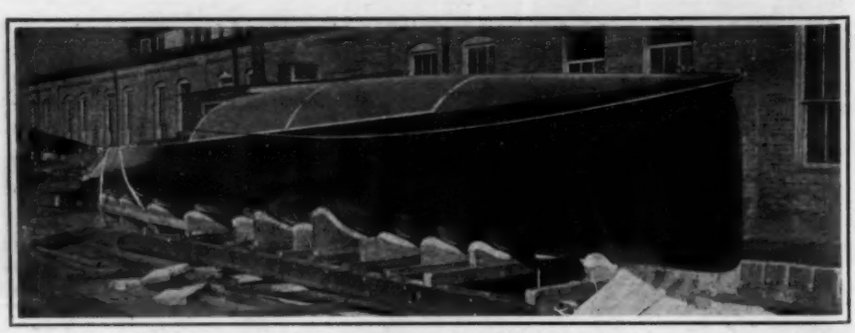
RECENT INCORPORATIONS.

Vehicle Speed Register Co., New York; capital, $100,000. Directors, E. A. Henkle, W. E. Horing, Philadelphia; E. O. Towne, New York.

Post Manufacturing Co., New York; capital, $50,000; to manufacture and repair tire protectors, motors, etc. Incorporators, Truman W. Post, New York; T. Lewis Thomas, Germantown, Pa.; Roger F. Murray, Plainfield, N. J.

Westmoreland Rubber Manufacturing Co., Grapeville, Pa.; capital, $100,000; to utilize old rubber for manufacturing new goods. Incorporators, Frank A. Wilcox and George Shiveley, of Jeanette; H. W. Dupuy and Herbert Dupuy, of Pittsburg.

European Auto Touring Co., New York; capital, $125,000; to conduct auto tours, particularly in Europe. Directors, John N. Cook, Philip R. Cook, Charles A. MacHenry, Jerome H. Buck, and Maurice L. Farrell, of New York.



HULL OF AUTO-BOAT TO BE FITTED WITH WINTON ENGINE AT CLEVELAND SHOPS.